THE JOURNAL

OF THE

NATIONAL ASSOCIATION of CHIROPODISTS

THE OFFICIAL PUBLICATION OF THE PROFESSION

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VOL. 42, NO. 9 SEPTEMBER, 1952

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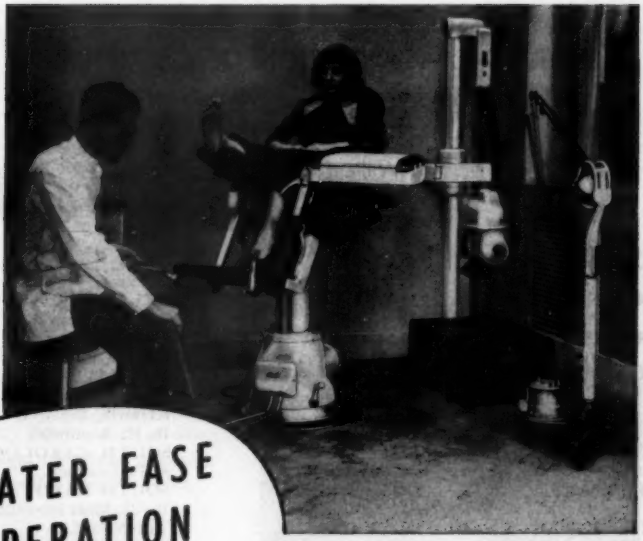

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OF THE

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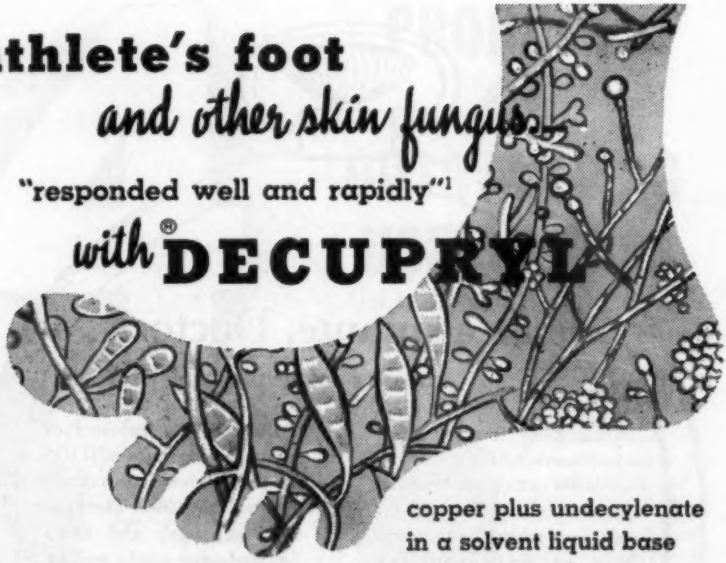

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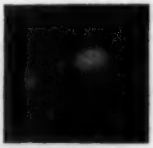

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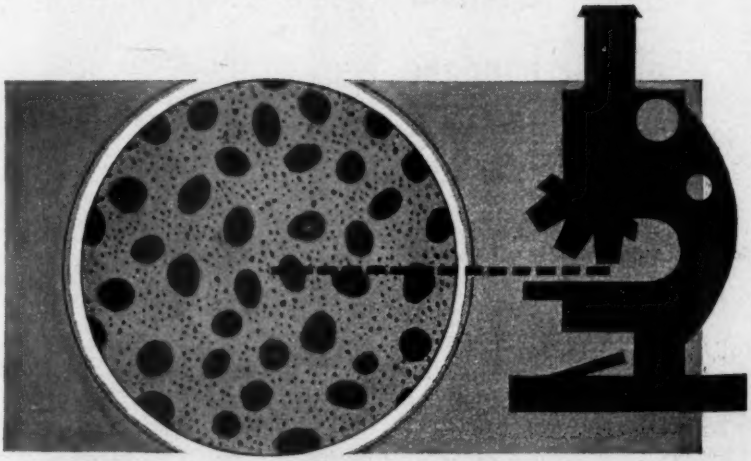

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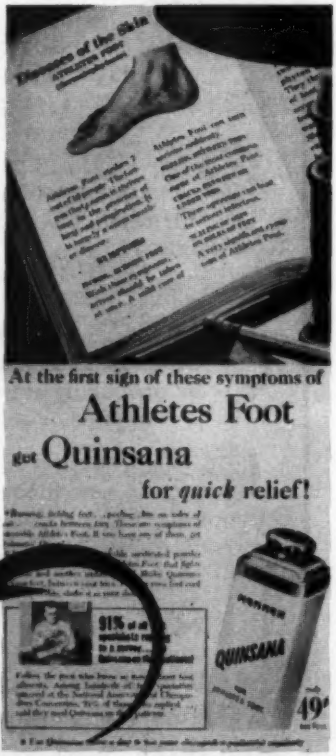

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VOLUME 42 SEPTEMBER, 1952 NUMBER 9

ORGANIZATION OF THE FOOT CLINIC IN THE ARMED SERVICES*

MILTON DEAN ROVEN, Pod.D.†
Brooklyn, N. Y.

THE newly appointed commissioned or enlisted chiropodist in the service should be in a position to establish, administer and operate a foot clinic under varying military conditions. He should be familiar with disturbances that are peculiar to the service and their treatment, so that he will be able to keep as many men on their feet as many days as possible. He should be able to supervise a footgear set-up and have the ability to instruct others on the proper fit and care of footwear.

The purpose of this paper is to enable the foot specialist to perform his duties in the service with greater efficiency, and to outline some of the more frequent foot lesions.

In World War II, when the chiropodist was given the opportunity to work side by side with the medical officer, he rendered a most valuable service. In 1946, Bernstein et al[1] reported 724 march fractures in 692 patients. They stated that one of the reasons they were able to see a larger number of march fracture cases than any other Infantry Replacement Training Center was "We were fortunate at this point in having well-trained chiropodists who cooperate with the various area surgeons in a very singular manner." Lt. Col. Bernstein had on his staff nine chiropodists who recorded from careful examination the necessary case histories which eventually made up his report.

Approximately eighty commissions in the Navy were granted chiropodists in World War II and on August 31, 1951, a letter was sent by the Bureau of Medicine and Surgery asking some of these reserve officers to

*Based on a series of lectures delivered before the student body at Long Island University, College of Podiatry, and post-graduate students at Manhattan General Hospital.

†Instructor, Long Island University, College of Podiatry. Lieutenant, Podiatrist Specialist, U. S. Naval Reserve; formerly officer in charge of foot clinics, Fleet Marine Force, Camp Elliott, San Diego, Calif.; Officer in charge of foot clinics, U. S. Naval Training and Distribution Center, Calif.

again volunteer for active duty. This is another indication of the useful service being performed by our profession. Recently several of the commissioned naval officers have returned to active duty.

Setting Up the Foot Clinic

The space requirement and the number of rooms for the foot clinic will depend on the number of personnel. However, a minimum of two rooms is necessary. One of these rooms is devoted entirely to foot soaks and the other to examination and treatment. Space permitting, other rooms can be set up for physio-therapy, surgery and a laboratory.

Cases that require wet dressings as acute fungous infections, infected nails and cellulitis are referred to the foot soak room where treatment is given as indicated. Proper proportions of medications used, i.e., potassium permanganate, magnesium sulphate and silver nitrate are clearly marked on each box so that they may be administered by a corpsman or an assistant.

Buckets or basins can be used but a more satisfactory arrangement can be constructed of galvanized iron. Six adjoining compartments are built, each 18 inches by 15 inches. Each compartment is two inches lower in the front than in the back, measuring 9 inches in height in front and 11 inches at the back. Three sets of faucets with swinging arms are placed so that each set serves two compartments. The inner surfaces of the compartments can be painted with aluminum paint and must be scrubbed clean and disinfected each night. Every week, the paint should be scraped down and the compartments repainted.

When the patient has finished his soak, he reverses his position; the feet are placed on a footrest, dried, and further treatment or dressings applied if indicated.

In the examination and treatment room, several chiropody units consisting of hydraulic chairs and full cabinets are ideal. If this is impossible, one such unit for examination will suffice and several units of combination footrest and cabinet can be made of wood by the carpenter's shop. The footrest is two feet high and has four legs about sixteen inches apart. The legs taper toward the top to form a heel seat for the foot. This is lined with felt. Facing the operator, shelves are built into this unit where medication and adhesive are within easy reach. The patient is seated on an ordinary chair with his leg extended on this footrest.

In a hospital or dispensary, it is best to have a ward devoted solely to foot conditions. Cases not permitted return to duty are confined here as well as post-operative foot surgical procedures. All foot cases confined in one area is an efficient arrangement for the chiropodist when he makes his rounds for sick call. The author worked with such an arrangement at a Marine base on the West coast. The foot clinic was housed in one building. At one end were the examination and treatment rooms, and at the other end was the ward devoted entirely to bedridden foot cases.

The laboratory need not be too large but should have the necessary equipment for fabricating appliances and for adhering pads for shoe modifications.

A history card of each patient should be kept noting the chief complaint, subjective and objective symptoms, diagnosis, treatment and disposition. In addition, a daily record book or log is kept recording the patient's name, diagnosis, treatment and whether it is a new case or a

re-treatment. This is essential for the monthly report which should be given to the Senior Medical Officer for the Bureau of Medicine and Surgery in Washington. A sample report used by the author appears on page 656 in the text "Modern Foot Therapy."

To facilitate referrals for x-ray or blood examinations, printed forms may be used and the information filled in accordingly. Cooperation with other departments is of the utmost importance.

The Shoe Fitting Unit

The chiropodist is well aware of the effects of faulty-fitting shoes. A War Department Manual[3] states that "improperly fitted footwear may cause a great many ailments, not all of which are confined to the foot. In fact, most of the ill effects resulting from the continual wearing of misfitted footwear react upon the general well-being of the individual, often to such an extent as to impair health, morale and efficiency. Properly fitted footwear, therefore, is not only best for the individual, it is also essential to the welfare of the Army. Many foot injuries resulting from misfitted footwear are slow to appear and for this reason some individuals can wear misfitted footwear for some time without any apparent ill effects. The continued wearing of misfitted footwear may eventually result in broken arches, chronic bunions, painful calluses, ingrown nails, corns, blisters, distorted toes, and aching feet. It is of utmost importance that the individual soldier wears footwear that fits properly."

The proper fit is determined by the following criteria:

(1) Proper position of the big toe joint. This should lie in the widest portion of the shoe.

(2) Sufficient length. There should be at least one-half inch between the end of the longest toe and the end of the shoe.

(3) Proper width across the ball of the shoe. The shoe should be filled by the foot without apparent tightness or excessive fullness. This is determined by pressing both thumbs against the lower inner and outer portions of the vamp of the shoe and working each thumb slowly toward the center until the thumbs nearly meet.

(4) Snug fit under the arch. The leather should lie snugly against the longitudinal arch and be free from excessive wrinkles and fullness.

The establishment of a shoe fitting room or section aids in efficient foot measurement, in checking of shoes for fit, and in expediting the processing of large groups of individuals.

It is best that a man wear full equipment to cause complete expansion of the feet before his shoe size is determined.

In the fitting section, one fitter can take care of up to 100 men daily. The most convenient arrangement is a shoe fitting platform on which the men to receive shoes are seated while the shoe fitter stands on the floor. Such a platform should be about 9 feet long, 3 feet wide and 34 inches high. Where from 100 to 300 men are processed daily, the platform should be increased in size to 16 feet in length. Six properly trained men are required to operate this unit: (a) one foot-measuring outfit operator (Brannock device, if available); (b) one initial trial shoe fitter; (c) one final shoe-fitting checker; (d) two stock feeders; (e) one recorder who enters the final fitted shoe size on man's record. In processing more than 300 men, the fitting personnel will be doubled.

To eliminate the inconvenience of unlacing and relacing shoes if another try-on shoe is required, a kickboard, approximately two inches thick, four inches wide and as long as required may be nailed to the top of the shoe fitting platform at a suitable spot. The individual may get his heels well back into the shoes without lacing them by kicking the heels of the shoes against the kickboard prior to checking the shoes for fit.

New shoes should not be worn on the march unless they have been "broken in." This can be done by having the soldier stand in two inches of water for five minutes. This will tend to make the leather soft and pliable. The man then walks on a level surface about an hour, and the pressure of the body weight causes the drying leather to conform to the shape of the feet.

New socks should be washed and shrunk before use for marching purposes. Turning socks wrong side out and changing socks from one foot to another equalizes wear and is conducive to comfort. Some soldiers grease their socks or rub the feet with a candle or vaseline to lessen the friction between foot and sock.

Shoes should be dried at night to prevent wrinkling and loss of shape. Where speed is necessary in the field, clean pebbles can be heated in a mess tin, and placed into the shoe until the moisture has been driven out.

In cold weather, moist leather may freeze. The shoes can be kept warm by using them as a head rest at night.

Frostbite

The winter fighting in Korea has brought frostbite to the fore. Our armed services have fought in the lowest temperatures under which any major American campaign has been waged. The chiropodist must be in a position to render modern therapy.

In World War II, the Eighth Army Air Force reported more casualties from frostbite than those from enemy gunfire from August 1942 to January 1944. Last winter, there were approximately 6,000 cold injury casualties in the Korean conflict and many more men were incapacitated because of severe sequelae.

Various treatments have been used. Lange and others[4] state that frostbite is secondary to vascular thrombosis and have reported excellent results from the use of heparin. Cortisone and ACTH therapy has been used in Korea since frostbite resembles burn injuries in some respects and this therapy has been useful in burns.[5] Pressure dressings and plaster casts have been beneficial on the frostbitten extremities of experimental animals.[6] Chemical vasodilators, and the results obtained from sympathectomy or sympathetic nerve block have been disappointing.[7]

Lewis[8] has evaluated the above methods of treatment and by duplicating these experiments has proven that the best therapeutic measure has been that of rapid rewarming of frostbitten tissues. This was determined on the basis of experiments with three hundred and ten male albino rabbits. One hind leg of each animal was immersed in an alcohol bath of −10°, −12°, −15° C. Rapid rewarming was performed with one hundred and sixty-eight animals and was accomplished by immersing the frozen leg in a water bath of 42° C immediately after exposure, until thawing was complete. (5 to 8 minutes) The animals with quickly thawed legs appeared on the whole to remain in much better general

condition than those left to spontaneous warming. Also, these animals whose injured legs had been thawed rapidly did not exhibit a picture of severe illness or a loss of considerable weight which was otherwise the rule.

It should be noted that little benefit is gained in treating frostbite after the tissue has been brought to body temperaure, as the damage is done at the time of the cold injury.

A new boot called the "Micky Mouse boot" has been developed which shows great promise in preventing frostbite. The soldier can wear the boot with only one pair of socks. Tests have shown that he can walk through freezing water and that within four minutes, the water in the boot will be foot temperature.

The boot is constructed on the layer-principle. An air chamber between two layers gives the boot perfect insulation and prevents the sweating and freezing that caused most frostbite casualties last winter.

Military Dermatology

The feet of military personnel are particularly susceptible to skin lesions because the feet are encased in relatively non-porous shoes which interfere with the removal of sweat. It is not always possible to remove shoes and stockings after mechanical or chemical irritation. Also, the moisture and heat of the foot after long marches or the prolonged wearing of footgear make conditions ideal for fungous growth. In combat, the hygiene must of necessity be poor so that the bacterial count on the surface of the skin is high. Extremes of heat and cold or prolonged immersion lower the resistance of the skin.

Fungous Infections: The high incidence of fungus is demonstrated by Navy statistics where is has been shown that between 1940 and 1943, the Navy hospitalized 14,068 patients for fungous infections of the skin, the large majority of them involving the groin and the feet. These patients lost 251,418 days from active duty, representing 17.1 per cent of sick days lost for all skin diseases. In World War II, dermatophytosis was listed as the second most common cutaneous disease, and was responsible for 8 per cent of the hospital admissions in the Army and Navy.

By culture (Sabouraud's media), the most common organisms found on the foot in their order of frequency were Trichophyton gypseum, Trichophyton purpureum, Monilia albicans and Epidermophyton inguinale. The growth of T. gypseum appears as white, fluffy, cottony mats on the surface with the reverse side of the media having a white or yellow color; T. purpureum appears as white, fluffy, cottony mats on the surface with the reverse side of the media having reddish purple pigmentation; Monilia albicans appears as smooth, slimy or pasty colonies of white or cream color; E. inguinale has a powdery appearance with a yellow, buff or tan color. Colonies appear puckered or with radiating furrows.

For purposes of treatment and disposition, i.e. whether a man is to be taken off duty or sent to the hospital, the simplest classification is to divide the fungi according to their clinical manifestations into three stages: acute, subacute, and chronic.

Acute stage: This stage presents excessive scaliness, maceration and superficial denuded fissures between and under the toes. As the disease

progresses, vesicles, single or in patches, appear along the longitudinal arch and lateral border of the sole. The vesicles sometimes calese to form bullae. These often rupture and cause the skin to become soggy and macerated.

Treatment is with potassium permanganate soaks (1:3000 solution) for thirty minutes three times daily or with 0.2 to 0.5 per cent silver nitrate solution as a foot soak. No fungicides should be used in this stage.
Subacute stage: After the acute stage subsides, the vesicular patches are replaced by scaling reddened patches. Soaks are continued as in the acute stage but less frequently. In addition, soothing agents as Lassar's paste may be applied at night and removed in the morning.
Chronic stage: characterized by thickened, hyperkeratotic plaques with scaling. Small vesicles may appear at the periphery of the plaques.

Treatment with fungicidal ointments like half strength Whitfields or Castellani's paint.

Trichophyton Purpureum presents a typical "moccasin" effect to the foot in which the infected reddened skin extends along the sides of the foot and heel leaving a sharply marginated border between the infected and normal skin. Scaling present is usually fine and branny. Treatment indicated here is with stronger fungicides as double strength Whitfields ointment or chrysarobin, three per cent in petrolatum.

In the treatment of any fungous infection it is important to observe the following:

(1) Diagnosis must be accurate. Treatment, for example of a contact dermatitis with strong fungicides, may complicate the picture.

(2) Overtreatment, or the incorrect treatment for fungus may cause more disability than the disease itself. Watch carefully the effects of salicylic acid preparations on the skin and discontinue its use if there is any evidence of irritation.

(3) There is no particular medication that will improve or cure all cases. All medications revolve on the phases of infection, whether acute, subacute or chronic and on the variations of the skin reaction to the fungous toxin. If improvement has not occurred within one week, it is best to switch to another medication.

(4) Dermatophytid eruptions on the hands or elsewhere are secondary to the primary dermatophytosis of the feet. It is due to a sensitization of the secondary areas by the blood-borne toxins or allergens from the fungous infection at the initial site. No fungi are found in the secondary lesions which are usually vesicular in nature. Treat the primary focus and the "id" reaction will disappear.

(5) Penicillin should not be given for secondary infection unless absolutely necessary since it is similar antigenically to pathogenic fungi and may increase the activity of the organism or of itself cause a dermatophytid reaction elsewhere.

(6) In the treatment of fungous infections in the tropics or for that matter any treatment of all skin diseases in the tropics, the rule to follow is: The more acute the dermatitis, the milder the therapy should be. The use of phenol, mercury, sulphur and keratolytic agents should be limited. The high humidity with a resultant dampness of the skin and increased hyperhydrosis appears to lower the natural resistance of the skin making it intolerant to accepted therapy that would be

used in temperate climates. Crusts and dead skin should be completely removed before any topical application is employed.

(7) Recently, the method of transmission of new fungous infections has been questioned. Authorities agree that it is a question of individual susceptibility. Some persons will acquire ringworm no matter what they do to avoid it; others will not acquire it despite repeated exposures.

Contact Dermatitis (*Dermatitis Venenata*): inflammation of the skin due to contact or application of some irritating substance to the skin is quite frequent in the armed services.

On the foot and leg, the most frequent irritants are leather dyes in shoes, tanning agents, shoe polishes, sock and dye finishes, rubbers, stockings (wool), foot powder and soaps. Also, anti-mould substances sprayed into shoes or varnishes applied to soles in shoes are common sensitivities.

The eruption is usually of sudden onset and is at first confused to the exposed areas. It may be vesicular or erythematous in character accompanied by sensations of itching and burning in varying degrees depending on the irritant. Usually about one week must elapse between the first contact and the dermatitis. The first sign is generally an area of erythema limited to the contact area. Later, edema, papules, vesicles and pustules may appear.

The areas involved in the foot in dermatitis venenata are chiefly the dorsum of the toes, particularly the big toes, sides and dorsum of the feet and sometimes the soles. The webs are relatively clear. Note that fungous infection generally occurs between the toes (especially the fourth and fifth), on the sides and plantar surface of the toes, and on the soles—occasionally on the sides of the foot—rarely on the dorsum of the foot or toes.

In the diagnosis, a complete and detailed history is most important, particularly when new articles were used within the past fourteen days of the first outbreak. Also consider agents that the patient may have been exposed to at work, or on liberty.

Patch testing may be necessary. However do not patch test during the acute stage as exacerbations of the eruption may occur. A simplified technique is to apply a small square of the suspected material (about ¼") to the skin. If the suspected irritant is a powder or liquid, impregnate a small piece of gauze or blotting paper with the substance. Cover with a one inch square of wax paper or cellophane and adhere to skin with scotch tape. Remove at the end of forty-eight hours. Positive reactions will range from mild, but sharply circumscribed, erythema to an intense vesicular or bullous reaction.

It is important to observe negative tests at the end of 24- or 48-hour intervals for delayed reactions.

Successful treatment depends upon the removal of the irritant from the skin and not upon the medication employed. Elimination of the sensitizing agent should clear the lesion within several days.

Local treatment in the acute stage is by wet dressings of boric acid, potassium permanganate (1:5000), Burow's (1:10) or by starch baths. If itching is severe, these should be used iced cold.

Fractures of the Metatarsal and Phalanges

In a previous article in the Journal of the N.A.C.[9], the writer described the treatment *without* the use of casts for fractures of the metatarsals and phalanges, and march fracture. These devices enabled the man to do a limited and in most cases regular duty and training.

Treatment of simple fractures of the metatarsals consisted of a "stock" leather shell strapped to the foot with adhesive. Those cases that had marked swelling or abrasions of the skin held the shell on by an elastic bandage or self-adhering gauze wrapped snugly around the dorsum. Celastic was added to the shell for those cases where more rigidity was required.

At the end of about four weeks, the strapping was removed, the adhesive trimmed away from the shell and the same shell was then used in the patient's shoe for another month.

Fractured toes responded to immobilization of the toe by adhesive, "gauztex" or "cohesive" to the next toe or on itself. Wooden or metal splints were found to be uncomfortable and where more immobilization was required the plate described for "march fracture" was used.

In march fracture, a bar of steel was placed between the inner and outer soles. This was held in place by rivets or tacks. A somewhat stiffened gait was created temporarily but the patient remained ambulatory and resumed his duty. Symptoms generally disappeared after about five days and the average time for complete recovery was about five weeks.

This treatment helped the injured man to justly minimize his injury, and encouraged him to use his injured foot more freely, thus hastening circulation and bone repair.

Summary

The organization of a foot clinic has been described and the more frequent foot disabilities and their treatment have been reviewed.

For further reading on the subject, reference is made to the bibliography and to the author's chapter on "Military Podiatry" in the textbook "Modern Foot Therapy."[2] These headings include: Foot Strain in the Service; Injection Therapy in Strained Foot and Weakfoot; Treatment of Foot Pains by Stretching Shortened Ligaments; Injection Treatment for Sprained Ankles; Tenosynovitis of the Tendo Achillis; Prevention of Fungous Infections of the Feet.

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MARCH FRACTURES

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DURING a military emergency any factor which influences the mobility of troops is of tremendous importance. The infantry still walks on its feet, and therefore we believe the subject of *march fractures* warrants our attention.

In 1855 a Prussian army surgeon named Breithaupt first described a typical case, following an extended march. Later similar cases were mentioned in French and English medical journals. March foot can also occur in civilian life since it is related to fatigue.

Some Army medical men in this country believe we should call the condition *march foot* instead of march fracture inasmuch as the fracture is merely one of the alterations that occurs in this syndrome.

March foot, if not treated early, becomes a progressive type of lesion. The type and severity of the fracture, if one is present, as well as the amount of callus will be proportional to the time the injured foot is permitted to bear weight after symptoms begin. All those cases seen were in patients who had given a history of having been on an extended march (from five to fifteen miles) with pain developing on that march. The signs and symptoms of march foot are fairly typical but the x-rays do not always show evidence of pathology. However, if one continues to walk on a foot, after the symptoms present themselves, an impacted fracture as well as displacement of the fragments can occur.

Signs and Symptoms

1. History of acute pain in the anterior portion of the foot, following an extended march.

2. Edema usually with ecchymosis covering an area, over the second, third and fourth metatarsal shafts. The normal depressions between the dworsi-flexor tendons and the interdigital spaces are temporarily lost by this edema.

3. A definite mass that can be palpated over the affected metatarsal, or metatarsals, is quite constant. This elevated area along the shaft is at first soft and later becomes hard and calcified. This is the sub-periosteal hemorrhage, the normal reaction of tissue to trauma. This palpable

mass is present very early and may still be in evidence after all other symptoms have vanished. (Fig. I)

4. Pain is always present and extreme "spot" tenderness can be found over the fracture if one is present.

We should like to divide march foot into three classes after a study of 50 cases that we handled while in the service.

Class I. Those cases seen that gave a typical history; edema over the involved metatarsal, and a palpable mass. However, the x-ray evidence of bone pathology is negative. In eight cases no x-ray evidence could be shown—even after pictures were repeated from two to four weeks.

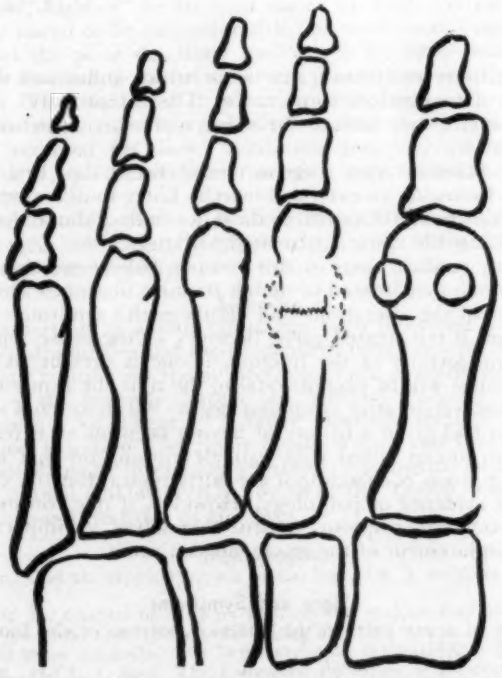

Figure I

MARCH FRACTURE (involving 2nd metatarsal shaft)

This type of fracture shows an insidious development, the result of micro-traumata. It rightly should belong to a group called "Fatigue" Fractures.

Class II. Same as I, although here we have x-ray evidence in subperiosteal callus formation.

Class III. Same as I, but here we have actual proof of a fractured metatarsal.

Etiology

Many theories have been advanced as to the cause of march foot. No doubt it is related to one or more factors which are:

1. *Improperly fitted shoes.* There must be some relationship between short and wide fitted shoes and pressure over the metatarsal bases, with an increased load-force thrown on the heads of the metatarsals against the insole of the shoe, than could possibly occur in a well-fitted shoe. Approximately 70% of all patients seen in our clinic were wearing ill-fitting shoes. In addition a lateral-force is exerted on the first and second toes in short, wide shoes. Bone cannot withstand abnormal stresses and strains for a continuous period of time without undergoing internal alterations.

2. *Earlier injury.* Several patients sprained their ankles and injured toes during the course of training; then, in addition, days or weeks later after the extended marches, came down with the typical march foot syndrome.

3. *Anatomy.* In many feet the long second metatarsal is present and when it is, it likewise is hypertrophied. These conditions can be linked with a syndrome known as a hypermobile first metatarsal segment. This is given as the reason for the frequency of involvement of the second metatarsal bone.

The 3rd is often involved and some investigators have found it to be one more frequently involved. An additional factor may be mentioned here: That of osteo-arthritic disease. One case had an associated Freiberg's, while in the other could be demonstrated an osteo-arthritis of the metatarso-phalangeal joints.

4. *Additional loading.* The infantry man carried a full pack of sixty pounds plus a rifle weighing 9 pounds. This overloading is transferred to the feet which now function under abnormal strain.

5. *Race, build and type of foot.* Not one case was recorded in former athletes or negroes; neither were cases seen in the foot with plenty of fat padding. Feet that were callused at the ball likewise seemed to be immune to this disability. Without exception these men had positions in civilian life that did not overtax their feet; the great majority had sitting jobs before entering the Service.

Case Histories

Case No. 1 (7-26-43)

History: In one week patient had been on two extended marches: one five miles and one ten miles. Following the second march the patient (male, age 24) experienced an acute pain in his right foot. The patient did not report to sick call until ten days later because the pain was now at its height. The pain was located at the distal end of the third and fourth metatarsal shafts, and radiated out to the third toe. Negative history of trauma. Walking or running increased pain which persisted even in the passive attitude. Pain had progressed so that it interfered with sleep.

Findings: Examination revealed "spot" tenderness over middle of third metatarsal shaft. X-rays demonstrated a march foot with early subperiosteal callus formed over the middle of the third metatarsal shaft.

Treatment: One week bed rest after which a march fracture pad strapping was placed on foot and a leather metatarsal bar 1½" wide and 3/16" thick was applied to the outsole of shoe. The bar was worn for six weeks and patient was symptom free.

Case No. 2 (1943)

History: Three weeks ago pain started in region of third metatarsal (right foot), after two hours of close order drill. Patient (male, age 21) gave no history of previous trauma to this foot. He described a pain that was referred to the distal end of the third toe.

Findings: As the forefoot was compressed the patient complained of tenderness. Direct pressure over the third metatarsal shaft produced pain. X-rays revealed a march fracture at the middle one-third of the third metatarsal shaft.

Treatment: Ten days bed rest at the end of which time a march fracture pad strapping was applied as well as a metatarsal bar to the sole of shoe. At end of seven weeks patient's pain subsided completely.

Figure II

MARCH FRACTURE PAD-STRAPPING

The shafts of 2nd and 3rd metatarsals are involved. The pad is placed in this area behind the toes, and incorporated within a "compression" strapping.

Mechanism of Fracture

March foot can be likened to a green stick fracture, only we believe it is due to excessive stress either in the antero-posterior or latero-medial directions. March fractures are associated with marching and weight bearing. The fracture line when it occurs is very narrow, incomplete and ordinarily will only go through the cortex. Sub-periosteal callus formation comes early. The mechanism of fracture no doubt is the result of cumulative, minor micro-traumata to a point above the capacity of the bone to withstand such a strain.

Treatment: The patient is placed in the hospital with the foot strapped in the following manner. The part is painted with tincture of benzoin compound and the toe of the injured metatarsal is splinted with narrow strips of adhesive to the adjacent toe. Place cotton padding between the taped toes. A felt metatarsal pad, properly skived, is held in position by adhesive strips around the dorsum of the foot. (Fig. II)

Conclusion

1. The cardinal points for proper diagnosis of march foot are: history edema, palpable mass and spot tenderness.
2. X-rays may not show a fracture line.
3. Healing time—three to six weeks.
4. March foot, or fracture, should rightly be called a "fatigue" type of fracture.

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AN ANOMALY OF THE MUSCULAR DYSTROPHIES

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THE OBSERVATION of this previously undescribed neuro-muscular lesion and its resultant osseus and soft tissue changes has led the author to publish his clinical findings, not only because of the interest created by a complex and novel case, but also in an effort to affirm the importance of a complete and thorough clinical investigation of every case rather than the cursory examination of a consequent localized foot lesion. This is an all-important consideration if we as a profession desire to treat causes rather than effects. A typical example of this cause and effect picture is the symptomatic heloma durum found at the dorso-lateral aspect of the proximal interphalangeal joint of the fifth toe. This painful condition is caused, in a great many cases, by an often asymptomatic pes valgo planus condition. In order to eliminate the excrescence, we must prevent the pronation of the rearfoot and the abduction of the forefoot which produces friction of the toe against the upper of the shoe. The following description is more graphic, although less common, evidence illustrating that we should recognize the cause of a condition if we hope to treat sensibly the symptom itself.

A twenty-one-year-old, well musculartured, white male, presented himself to this foot clinic complaining of "pain in my left foot, pain and

aching in the front of my leg when I march and irritation of the tops of my toes where they rub against my boot." He maintained that the usual palliative measures for relief had been exhausted without success. He also volunteered that in marching it was difficult for him to remain directly behind the man in front of him and that he found himself wavering either to the left or to the right. The clinical examination revealed the following information:

(a) The patient is at the present time, and has been for a number of years, in good general health. He is willing and able to carry out any duties assigned to him but not without the previously mentioned difficulties.

(b) His past medical history revealed no history of trauma, febrile diseases or prolonged bedrest, but that a shortening of the left foot had been evidenced since age six.

(c) The only significant familial history was the fact that an older brother also had a unilateral foot shortening, for which special shoes had been prescribed.

(d) A girth measurement showed a generalized atrophy of one-quarter of an inch of both upper and lower extremities. Girth measurements taken at three and six inches below the tibial tubercle revealed the atrophy of the left leg to be one-half to three-quarters of an inch respectively.

(e) Patient stands with weight equally distributed on both feet. There is no asymmetry of limb length but there is apparent atrophy of the peroneal muscle group on the left side. The right foot represents a medium to high arch type without change in attitude on weight bearing. The left foot, on weight bearing, represents a pes cavus type foot with mild clawing of the toes which appear to be mildly irritated on their dorsal aspect. The foot is markedly inverted. The forefoot is adducted and there is five-eighths of an inch shortening of the left foot as compared with the right. There are no excrescences nor evidence of swelling or inflammation. Upon palpation, there is tenderness in the area of the anterior crural muscle group of the left leg only.

(f) The neurological examination of deep reflexes is negative. A hypesthesia of the dermatome enervated by the anterior femoral cutaneus (L-2 and 3) and the superficial peroneal (L-4 and 5, S-1 and 2) was evidenced on the left side only.

(g) The x-rays of both feet were negative for gross bone or joint pathology. Pathomechanical study, non-weight bearing, revealed a 40 degree pitch of both calcanei, narrowing of the joint spaces of the tarsus inferiorly in the left foot with the resultant appearance of flexion of the forefoot on the rearfoot, giving the impression of a high arch or pseudo cavus type foot. X-rays of the lumbo-sacral spine reveal a scoliosis to the left and a pedicle defect on the left side of the fifth lumbar vertebra and a possible pedicle defect on the right side of the fourth lumbar vertebra.

(h) The vascular examination reveals excellent pulses bilaterally and no obvious venous incompetency.

(i) All motions at the ankle joint are within normal limits, but active eversion of the left foot is somewhat less than the right. Flexion of

the left foot on the leg is limited to ninety-five degrees due to the flexion of the forefoot on the rearfoot.

(j) His footgear, being fairly new, showed only a slight amount of excessive wear on the lateral aspect of the sole of the left boot. The toe of this boot was warped upwards, a factor usually coincidental with a "long" fit. This occurs even though the patient wears a felt filler for this shoe.

From the above we observe that several diagnoses must be considered. In order of their likelihood, we list:

(1) Congenital spinal defect; (2) Abortive poliomyelitis; (3) Undisclosed local injury to superficial peroneal nerve; (4) Congenital unilateral pes cavus; (5) Charcot Marie Tooth disease or peroneal atrophy.

The set of symptoms outlined, however, does not coincide perfectly with any of these disorders. But by a process of elimination we can rule out all but one of the five possible diagnoses.

If we are dealing with Charcot Marie Tooth disease we must explain why the lesion is neither progressive nor bilateral and why we do not find the usual sequel of events, that is, paralysis of the anterior crural muscles, as well as the peroneals, and the typical flaccid foot drop.

If we are dealing with a congenital pes cavus foot, how can we explain the sensory changes and the isolated atrophy of the peroneal muscles? The most significant point of elimination, however, is seen in the x-ray. In this case we have the cavus effect produced at the mid-tarsal joint with flexion of the forefoot on the rearfoot, rather than a true cavus picture caused by an extremely high-pitched calcaneous.

If we are dealing with a local injury to the common peroneal nerve or the superficial peroneal, why do we have absolutely no history of trauma and how can we explain the sensory changes in the thigh?

Poliomyelitis is more difficult to eliminate, but we do so on the grounds that since this disease affects the anterior horn cells only, we should have only motor changes and not sensory changes.

The remaining possibility, congenital spinal defect, is chosen because it would seem to be more than a coincidence that we find the defect in the bodies of the fourth and fifth lumbar vertebrae, the same bodies through which the nerve roots emanate, that control the motor and sensory reflexes of both the common peroneal nerve and the superficial nerve, the two nerves innervating the area and muscles in which our anomaly is found. And, when we realize that this spinal defect which includes a scoliosis, pedicle defects, spina bifida and prespondylolisthesis, any one of which could conceivably cause the peripheral nerve changes, we become more firmly convinced that our diagnosis is the logical choice.

Having concluded that the congenital spinal defect is the etiological factor producing the atrophy of the peroneal muscles, we must now trace the sequelae of mechanical changes leading to the pain in the anterior crural group of muscles; it being important that we determine the cause of the atrophy in order to eliminate the possibility of an active lower motor neuron lesion or some active muscular dystrophy.

If, during the early growth, the peroneal muscles, the primary evertors of the foot, lose as little as ten to fifteen percent of their innervation and, therefore, the same percentage of their function, their antagonistic

muscles, and tibialis anterior and the tibialis posterior, the primary invertors of the foot, will be in a state of overbalance. This overbalance tends to pull the foot into marked inversion and forefoot adduction, and over a period of years will have produced a pseudo cavus type foot with contracture of the plantar soft structures and a shortening of the foot as a whole. With this type of deformity, we find that although tne active flexion motion at the ankle joint is within normal limits, the anterior crural group of muscles must flex the foot on the leg an additional ten to fifteen degrees in order to allow the flexed forefoot to clear the ground in walking. This condition, often referred to as pseudo shortening of the posterior crural muscles, produces such a severe strain on the flexors of the foot that all five digits are found to be hyperextended at their metatarso-phalangeal joints.

Recommendations and Treatment

Ideally, to treat causes rather than effects in this case, surgical correction of the spinal defect would be indicated before dealing with the peripheral effects. However, since surgery is not warranted, we must be satisfied with an attempt at strengthening the weak peroneal muscles and correcting the deformity of inversion and forefoot adduction. In addition, we must lengthen the normal posterior crural group of muscles in order to achieve sufficient flexion of the foot on the leg. In order to accomplish this, the following recommendations for treatment were instituted:

1. A shoe prescription allowing for the five-eighths of an inch shortening of the left foot.
2. Exercises to induce strengthening of the peroneal muscles, stretching of the posterior crural muscles and stretching of the contracted plantar soft structures of the left foot.
3. A prescription for three-sixteenths of an inch lateral heel wedge and one-eighth of an inch medial sole wedge.
4. Limitation of physical activity, demanding excessive use of the lower extremities in marching and drilling.
5. Treatment of the strained anterior crural group of muscles, per se, was not carried out due to lack of time and facilities, but instructions were given for self-treatment, etc., hot showers, massage and liniment.

A three-week check revealed that the acute symptoms had somewhat subsided and the author would like to conclude that this improvement was due, to some extent, to the treatment recommended rather than the decrease of physical activity alone. In attitude, the foot on weight-bearing had in no way changed in such a short time, nor was this expected, but the patient did notice that since his footgear had been cross-wedged he was better able to maintain his balance and position when marching in ranks.

This paper is not intended as a guide to treatment technique. However, it does attempt to emphasize the importance of a thorough clinical investigation of every case before any treatment is instituted, reasoning that the expenditure of the additional time and effort has worthwhile compensations.

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THE THERMOS BOOT— DRAMATIC ANSWER TO FOOT FROSTBITE

WILLIAM A. ROSSI, D.S.C.*
Boston, Mass.

A LITTLE over a year ago, a furore of public criticism rose against the military footwear our armed forces were receiving in Korea. Our GI footwear was respected as the best in the world. Yet, in the bitter 1950-51 winter of Korean fighting, 60,000 cases of severe frostbite were reported—*more than all our armed forces suffered during the entire period of World War II.*

Of these Korean cold-weather casualties, some 6,000 were hospitalized, and several hundreds had toes or portions of their feet amputated. Hundreds of others, though escaping amputations, were rendered physically unfit to return to active duty.

Letters from angry parents poured into Washington, demanding explanation and action. Also, a Congressional investigation was getting under way. Suddenly, as if in magical answer to the problem, the Navy came up with a miracle anti-frostbite boot that can render an 80-below-zero temperature harmless to the foot. Pentagon officials have called it "the only great stride in cold-weather footwear development in the past 35 years."

Within 16 hours after Marine Corps officials examined the boot, 40,000 pairs were ordered. The Department of Defense states that the Marine Corps "will replace all Shoepacs and heavy wool socks for use in wet-cold areas, with the new Navy boot."

The Army and Air Force have adopted it. The Navy will use it for submarine personnel and in cold-duty areas. Military officials of Canada, England, Denmark, India and other friendly nations have shown active interest in adopting it.

Stated one high-ranking officer in the Army Surgeon General's office, "This is a tremendous victory in our search for survival equipment. Grim experience shows that a severely frostbitten foot can knock a soldier out of battle as effectively as can a bullet. While our military officials were pleading the need of manpower reinforcements in Korea, four full fighting divisions, 60,000 of our men, became frozen-foot casualties. These temporary disabilities cut sharply into our fighting power against the enemy. This anti-frostbite boot comes as a godsend, not only for the

*Editor, Leather and Shoes.

soldier's comfort—and often his very life—but in keeping our battle power at maximum strength in the field."

The new Navy boot incorporates the scientific principle of insulation —the first time ever used in footwear. The boot, coming half way up the leg, is made of two layers of rubber, each with a thick fleece lining. Between these two layers is an air chamber that comprises the insulation. The heat of the foot furnishes the natural warmth. This warmth would otherwise escape, but the insulation retains it, much as the temperature of a liquid in a picnic jug is retained. In fact, Navy officials call it "a picnic jug molded to the shape of a boot."

The boot was so effective as protection against foot freeze that even the Alaskan Eskimo who tested this footgear, have discarded their traditional fur boots and will wear nothing but the Navy boot.

The Shoepac, until recently the best cold-weather boot of our armed forces, requires a change of socks every 12 hours under wet-cold conditions if frostbite is to be prevented. But the Navy shoe can be worn for many days without a change of socks, without harm—even when the socks are wet. And wet socks in extreme cold mean almost certain frostbite.

Feet accounted for 90 per cent of all frostbite cases in Korea and other wet-cold battle fronts. About 10 per cent were evacuated and hospital-

Impermeable (dipped rubber latex) outer section.

Insulated pile fabric sections laminated to the inner and outer shells.

Impermeable (dipped rubber latex) inner section.

Vulcanizing and bonding of the sections to completely seal the boot.

ized, and about three per cent required amputations because of gangrene resulting from the frostbite. Many of the hospitalized cases can't return to active military duty. Once a man is severely frostbitten he's always susceptible to subsequent attacks because of the permanently weakened condition of the blood vessels and tissues originally afflicted.

The new Navy boot will now play a tremendous role in reducing our casualties on the field. This can be appreciated upon reading an excerpt from the recent report of Captain Eugene R. Hering, a Navy surgeon who spent the bitter 1950-51 winter with the Marines in Korea. In an address before the delegates of the 1951 convention of the American Medical Association, he recounted the fighting withdrawal of the 1st Marine Division from the Changjin Reservoir to Hungnam in December of 1950:

"The conditions were thirty-below-zero weather with no fires or warming tents, frozen C rations for food, snow for water, and the hills lined with screaming Chinese thousands for 16 bloody miles. The division suffered 2,500 cases of frostbite during the withdrawal. We had good clothing, and the men had been indoctrinated. But the very nature of that fight made it impossible for the troops to take all precautions. Men would struggle up steep hills to drive out the Chinese; their feet would perspire, then they would be pinned down by enemy gunfire and the sweat would turn to ice. They had no facilities for changing socks, and even changing them was extremely difficult. Men arrived at the clearing station at Hagaru with a shell of ice around their feet inside their boots. Fifteen hundred of the severest frostbite cases were evacuated by air. About three per cent of the 2,500 cases required some kind of amputation as a result of frostbite."

John Baldridge, a 19-year-old Marine Corps private who was in that retreat, lay in his bed at the Percy Jones military hospital at Osaka, Japan—a special hospital set up for the thousands of severe frostbite cases that came out of the Korean winter fighting. He looked down at his blackened, shrivelled feet.

"They're going to cut off my toes," he said, "but they'll save the rest of my feet. And that's something." He paused, recalling how he had staggered back to the Allied lines, his feet frozen blue. "It took them 30 minutes to get my boots off. They were froze stuck to my feet."

Frostbite is a trivial-sounding but truly terrible affliction in which the flesh freezes solid, then dies and decays. It carries with it intense pain and suffering. The Defense Department, for the first time in U. S. military history, now awards the Purple Heart medal for severe frostbite cases.

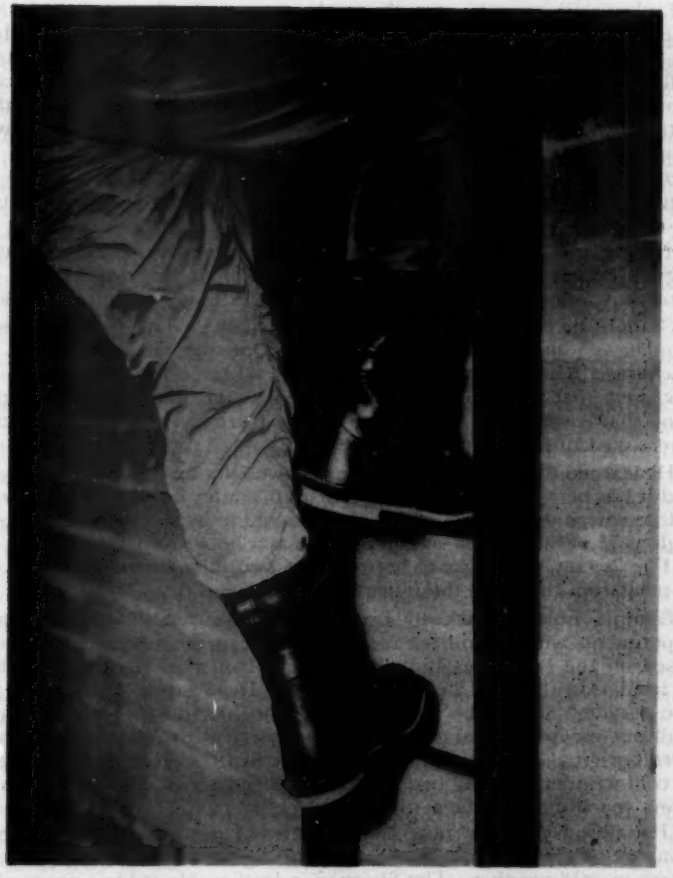
Frostbite is caused by cold but rarely by cold alone. The element of wetness must be combined with the cold, such as from damp socks which extreme cold converts into a layer of ice around the foot and freezes the flesh. It's of vital importance that the socks and shoe interior be kept dry. But under severe battle conditions, such as those described by Captain Hering, there's little or no time to dry out shoes and socks, or even to change socks. The soldier must keep on the run in his ice-packed feet—or chance falling victim to the enemy at his heels.

The perfect answer is the revolutionary new Navy boot. The men directly responsible for the boot's development are Salvatore Gianola, Dominic Maglio and Lt. J. C. Busby, all of whom are connected with the

Naval Clothing Depot in Brooklyn, where Gianola, a young but experienced technologist of 32, is Director of Development in Textiles and Clothing. The fourth man of this team is Lester L'Hollier, footwear designer at the Hood Rubber Co., Watertown, Mass., who contributed his vast practical experience to this high-priority project.

The boot came out of three years of countless experiments and discouraging trials. In 1948, the Navy was seeking a protective boot for submarine crewmen whose feet might become soaked after a half-hour deck duty from waves breaking over the low conning tower. One rubber company after another was approached by the Navy, but they showed little willingness to tackle what was, as one company executive said, "a hopeless job of trying to beat the impossible."

The next company approached was Hood Rubber, where L'Hollier had been trying to build a similar special boot for the Air Force. An



airman might get his feet sweated or damp on the ground, then a few minutes later be up in a plane 30,000 feet in the cold air where frostbite could attack. Hood had developed a warmer protective boot for these conditions, but it was still a long way from what the Navy wanted.

Then the Gianola-Maglio-Busby-L'Hollier team sat down and started from zero. They worked out a "theoretical" boot incorporating several new scientific ideas. About 200 of these boots were made, to be tested aboard ships in Arctic waters.

Maglio spent several months aboard various types of ships—a submarine, aircraft carrier, destroyer. In below-zero temperatures his submarine took 52 dives in a 30-day period. Aboard a destroyer under extreme wet-cold conditions where the regular four-hour watch is reduced to shorter intervals, the watchstanders could now, with the new boot, stand duty their full four hours without discomfort.

Enthusiastic reports came from the men and officers aboard these ships. Said the skipper of the destroyer, "The fact that this new boot enables a man to stand his full four-hour watch under difficult conditions will add enormously to the fighting fitness of the crew. Under battle conditions at sea in extreme cold, all men may be required to be at their battle stations for many hours, even days. Without the boot it might be nearly impossible—and the toll of suffering would be great. The tremendous value of this new boot is only too obvious."

But though the boot was ideal for use at sea, its adaptation for land use required definite improvements. For example, the sea boot was too warm at temperatures from 35 to 50 degrees above zero, too cold at 65 degrees below. The Navy wanted a "land" boot that would take just about any weather extreme, but particularly extreme wet-cold conditions.

Gianola had been testing the boot in Alaska. The tests revealed a number of "bugs" yet to be removed. One day, in low spirits, the discouraged Gianola watched a couple of Eskimos building an igloo. He saw them first construct the "inner" igloo—then later a larger "outer" igloo that covered the smaller one inside. Curious, he studied the structure, asked questions.

He learned that the space between the two igloos was about a foot wide, and it was here that the Eskimo hung up his outer heavy garments to dry before entering the warm inner igloo where the temperature might be as high as 75 or 80 degrees—as comfortable as a house in Miami.

The "secret"? The space between the two igloos was actually a wall of insulation that kept the inner igloo warm and dry.

Gianola hurried back to Brooklyn and started another group of experiments with L'Hollier. Soon they came up with the "thermo-boot" based on the igloo idea but greatly refined on the scientific principles of insulation that had been developed by Dr. Paul Siple over the past two decades. Siple, who now serves as consultant to the Joint Chiefs of Staff on "environmental protection," had been with Admiral Richard E. Byrd's original expedition to the Antarctic in 1928. His scientific interest in cold-weather clothing had started there and was vastly expanded over many years of work given to the subject.

The new Navy boot now held promise of overcoming all the shortcomings of the Shoepac, the standard footgear worn by all the armed forces in cold weather. The Shoepac, a leather-sole rubber upper shoe, sometimes leaked, couldn't take extreme cold, got damp from sweat inside. In the Shoepac the foot was unable to adapt to sudden great shifts in temperature—such as in the Arctic where within four hours the temperature can change from 40 below zero to 40 above, then to 40 below again. And it wasn't a scientifically designed boot; 60 to 70 per cent of its weight is in the portion from the ankle down, making it a weary drag on the foot. The Navy boot is only several ounces lighter but actually feels a couple of pounds lighter because its weight is more evenly distributed.

But for all the faults of the Shoepac, it still has been, until now, about the best military boot used anywhere in Korea. The first thing the Chinese Reds and North Koreans did to captured, wounded or killed GI's was to take the shoes off their feet for themselves. The foot frostbite toll among the enemy was fabulously high.

The biggest problem that faced Gianola's Navy team was to keep the inside of the thermo-boot dry and warm at temperatures as extreme as 80 below zero. It was easy enough to make it airtight and watertight. But if the foot's sweat couldn't evaporate it would freeze—and that meant frostbite.

Dampness around the foot could by itself make the foot colder. Colonel Maurice E. Barker, former head of the Army's Chemical Corps School at Edgewood Arsenal, Md., and an authority on cold-weather clothing, says, "The heat loss is twice as great when a wet or damp layer of clothing is next to the body surface as when a dry layer covers the surface."

Moreover, loss of temperature of the foot reduces the temperature of the whole body. "If the feet, hands and head are kept warm," Gianola told me, "the whole body will be made warmer."

The Navy team was now certain it had created a perfect insulation system within the boot. The foot perspiration rises upward and out of the boot—doesn't stay inside to turn into ice. Tested in a laboratory cold room where the temperature hit 80 below zero, the perspiration rose to the upper rim of the boot, where it precipitated into frost. But the foot and sock remained dry and warm. The great danger of moisture condensing within the boot was now soundly beaten.

The Navy boot is not only anti-frostbite but anti-sweat. Gianola and Maglio took a six-hour march with a group of soldiers in an Army Quartermaster testing unit. They all carried the standard 52-pound pack. One group wore Shoepacs, another the Navy boot. At the end of the march, the feet and socks of those wearing the Shoepacs were wet with perspiration, while those wearing the Navy boot were perfectly dry. And you can't have frostbite without dampness.

The boot was tested in the North Atlantic, North Pacific, Alaska, Mount Washington, Cuba, so that every climatic condition was met. Gianola and Lt. Busby spent seven months around Point Barrows, Alaska. There they filled their boots with ice water and went on a hike with the temperature at 40 below zero. Within two hours the water was at normal skin temperature.

They tried soaking their socks, then walking around in the boot. The moisture in the socks rose and settled around the top of the boot, and the socks were actually drier after the long walk.

Gianola tried hard to get the local Eskimos to wear the boot and pass an opinion. But the Eskimos, skeptical and stubborn, refused. Finally, they got the "senior" Eskimo, who had the 700-mile dogsled run from Point Barrows to Nome, to try a pair on his next mail run. The Eskimo donned the boots, started on his run in a 60-below-zero temperature. As he admitted later, he had planned to change back into his conventional fur boots as soon as he was out of sight.

A couple of days later, a cub plane, with Gianola aboard, followed the mail route, caught up with the Eskimo, flew low over him. The Eskimo waved his arms excitedly, pointed to his Navy boots still on his feet, jumped up and down.

Gianola's interpretations of these gyrations proved correct: the Eskimo was delighted with the boots. He made the entire mail run and back in them. The Eskimo has since discarded all his fur boots, will wear

nothing but the Navy boots. Science had beaten a centuries-old Eskimo clothing habit.

Another skeptic was old Ned Rawlins, civilian bossman of a U. S. construction crew in Alaska. Ned had spent many years up there, was completely sold on native clothing. "These Eskimos have worn this outfit for hundreds of years," he growled, "and they ain't no dying race." He ridiculed the Navy boots. "Rubber to protect your feet at 60 below? If that ain't the craziest damn-fool idea anybody ever cooked up! Why, if them things worked I'd eat 'em."

Gianola jumped quickly to the challenge. "All right, Ned, that works two ways. Wear them. If they don't beat any boot you've ever worn up here, *I'll* eat them."

Ned grinned. "That's one meal I'm gonna enjoy watching."

He wore the boots constantly for four days which he spent away from the camp in bitter cold weather. When he returned he sat down with the crew for supper. Gianola patiently waited for a report. Finally old Ned looked up, growled, "All right, I'll eat the damn things—only on condition you get me another pair."

Today, most of the hundreds of men in Ned Rawlins' crew, along with many of the local Eskimos, are wearing the Navy boot.

"Strange as it seems," Gianola told me, "the Eskimo doesn't know how to clothe himself to obtain the highest protection against the extreme cold he lives with. His best survival weapon is his good sense to stay out of extreme cold, which he does. His biggest job is preventing frost and ice from stiffening his clothing. For instance, he'll chew on his fur boots to break up ice particles and keep the fur soft and pliable. It isn't so much his clothing that keep him warm as it is his constant *care* of his clothing."

Gianola and Maglio carried out prolonged tests with the boots on Mount Washington, where some of the world's most extreme weather conditions have been recorded. This 6,288-foot peak holds the world's wind velocity record of 231 miles an hour; hurricane winds of over 75 miles an hour have been recorded an on average of every third day.

During a hike there, Gianola and Maglio came across a small group of mountain climbers. One of the men in the group was unable to go on because of nearly frozen feet that were already past the initial stages of frostbite. Maglio gave him an extra pair of the Navy boots he was carrying. The grateful climber later reported that within an hour his feet felt warm and comfortable again.

One member of the Army Signal Corps stationed on Mount Washington told Maglio, "From here on I'm not traveling anywhere without these boots. I'd chuck the whole contents of my duffel bag if necessary—everything except these boots. They could mean a man's life."

According to L'Hollier of Hood Rubber, it won't be long before these boots are available for civilian use. "As soon as we can fill the military orders." The boot will come as a blessing to hunters, traffic cops, mailmen, mountain climbers, and outdoor workers of all kind, giving the feet a heretofore unknown protective comfort and warmth under wet-cold conditions.

But its greatest value lies as a military weapon—for a weapon it truly is. As Gianola says, "In the next war, frostbite will take an appalling

toll of casualties for the unprepared and unequipped. Consider the areas in which such a war is likely to be fought—in Arctic territories, in places like Alaska and Korea, the extreme northern sectors of Europe and Asia. In these places, temperatures of 20 to 70 degrees below zero are common during part or all of the year. The most critical, single survival factor will not be guns but clothing—particularly footwear."

It was frostbite that took the terrible toll of casualties on Napoleon's army during its disastrous retreat from Moscow in the winter of 1812. During the long forced marches through ice, snow and bitter cold, 15,000 men perished on the way back to Vilna, unable to go further on their frozen, gangrenous feet.

Said Napoleon later, "We had the better men and the better equipment—but the Russians knew better how to protect their feet from the extreme cold."

That could be prophetic. But if the challenge ever comes, there will be no failure due to frozen feet. For the Navy boot adds a potent new weapon to our military arsenal.

In the early part of the 1951-52 winter in Korea, virtually no foot frostbite cases have been reported due to failure of the new thermos boot to protect the feet. This is a phenomenal conquest of the dreaded frostbite. And the tale has an appropriate and deserving ending. In January, 1952, Gianola and Maglio were awarded a special commendation by the government, in behalf of our armed forces. Commander H. R. Fahlbusch, U.S.N., in making the award, stated that the boot had prevented frostbite of the feet among American troops in Korea "without a single exception."

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CASH AWARDS are offered for research papers on any subject in the field of chiropody. Final date on which papers will be accepted is April 15, 1953.

Members who desire to submit papers should make application on a form provided for that purpose which can be obtained from the executive secretary. The rules for the 1953 Awards were published in the 1952 July and September issues of the JOURNAL OF THE N.A.C.

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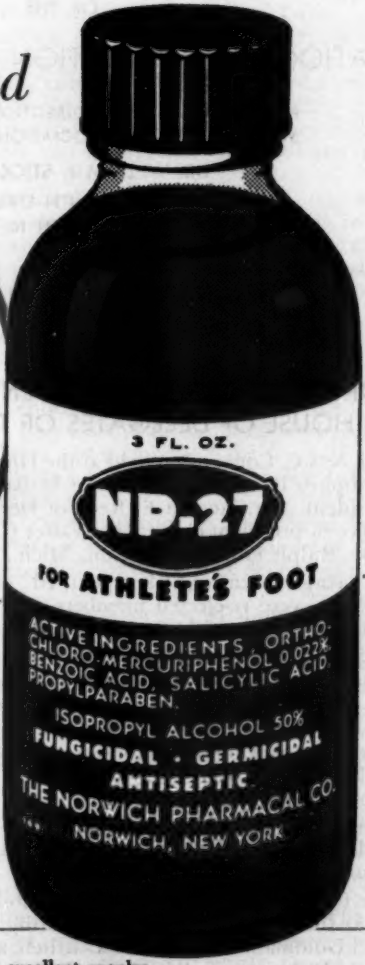

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THE

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Address all communications intended for publication, matter relating to advertising, business or subscriptions to the Editor.

REPORT; 40TH ANNUAL CONVENTION AND 33RD HOUSE OF DELEGATES OF THE N.A.C.

AT THE N.A.C. Convention held at the Hotel Peabody, August 14-19, 1952, in Memphis, Dr. Max Speizman of Wilkes-Barre, Pa., assumed the office of president. Dr. Stewart E. Reed of Des Moines, Iowa, was elevated to the office of president-elect. Dr. Walter C. Gigerich of Little Rock, Ark., and Dr. Ralph Fowler of Detroit, Mich., were elected vice presidents.

Dr. George Guenzler of Freeport, Ill., and Dr. Joel Freeman of Brooklyn, N. Y., were re-elected members of the Council on Education, and Dr. Morris Marcus of Miami, Fla., was also elected to the Council.

The following were re-elected to serve on the Board of Trustees of the American Foot Health Foundation: Dr. Sidney Hirschberg, Forest Hills, N. Y., and Dr. Floyd Frost, Toledo, Ohio. Dr. Earl Kaplan of Detroit, Mich., was also elected a Trustee.

Mrs. E. Wirt Dobbs of Houston, Texas, was elected president of the N.A.C. Women's Auxiliary, and Mrs. J. B. Collet of Des Plaines, Ill., was re-elected secretary-treasurer.

Honorary membership was conferred on Reuben Friedman, M.D., Philadelphia, Pa.; Max Pomerantz, M.D., Cleveland, Ohio; and Tyler Stroup, M.D., D.S.C., Indianapolis, Ind.

The following were nominated for honorary membership to be acted upon at the 1953 meeting: Harvey Billig, M.D., Adolph Schmidt, M.D., Samuel Goldman, M.D., and A. Gottlieb, all of California; Alfred Shands, M.D., of Delaware; and J. H. MacDermot, M.D., of Vancouver, B. C.

Life membership was conferred on the following: Drs. Paul Tarara, Minn.; John Shea, Conn.; Fred Schmitt, N. Y.; M. D. Pollock, Ark.; John Miller, Ala.; Edward C. Holloway, R. I.; Reuben H. Gross, N. Y.; A. Owen Penney, D. C.; M. Robitaille, Calif.; Harry H. Fitzhenry, Calif.; George W. Scherer, Sr., Calif.; Beatrice Schnee, Calif.; Carl Dehmel, Calif.;

H. Northrop, Mass.; A. L. D. Tecklenburg, Colo.; and George D. Scherer, Tenn.

Winners of the 1952 N.A.C. Awards for Research in Chiropody were announced as follows—First Award, $500.00, Dr. J. V. Cerney, Dayton, Ohio; Second Award, $250.00, Dr. Charles E. Krausz, Philadelphia, Pa.; Third Award, $100.00, Dr. Dale W. Austin, Los Angeles, Calif.

Retiring President Dr. Stivers was presented with an engraved plaque in appreciation of his splendid services to the N.A.C. during his term in office. Dr. Marvin W. Shapiro, Toledo, Ohio, was awarded a certificate of merit for his excellent work in the field of visual education.

The 1952 convention was dedicated to Dr. George D. Scherer of Memphis, who received many honors and testimonials for his long years of service to the profession and to the N.A.C.

The House of Delegates approved the report of the Executive Committee which provided for the purchase of a headquarters building in Washington, an administrative assistant for the Executive Secretary, extension of the contract of the Executive Secretary, a comprehensive hospital and institutional affiliation program, and an armed forces recognition program.

The delegates voted approval of inclusion of the profession under Social Security.

The House also approved the creation of a special committee to study the activities of the N.A.C. and endeavor to measure their value to members under today's conditions. This committee on "study and planning" will consist of the executive officers and members of the Council. A special meeting of the group is scheduled to be held sometime before the next session of the House of Delegates.

Dr. Charles E. Krausz served as toastmaster at the official banquet and Dr. William S. King, president of the Tennessee Chiropody Association, delivered the address of welcome. Dr. George D. Scherer and family were honored at this event.

An outstanding scientific program was presented under the auspices of Dr. Chester Nava, Chairman of the N.A.C. Scientific Committee, who was assisted by Dr. Edward Mattingly. One day was devoted entirely to the first annual meeting of the American Chiropody Conference on Organization and Education.

The business and social program of the Women's Auxiliary was very successful, according to Mrs. William S. King, president of the Tennessee chapter of that organization, which served as host to the ladies who attended.

All the affiliated specialty organizations held meetings during the convention. The Military Association of Chiropodists elected the following officers: President, Dr. W. W. DeHart of Flint, Mich.; Vice President, Dr. A. Dyer, Little Rock, Ark.; and Secretary-Treasurer, Dr. M. K. Upshaw, Jr., Jackson, Miss. Other groups also elected officers. The names will be published in future issues of the JOURNAL. The November issue will contain an abstract of the business transacted by the House of Delegates.

INVITE NON-MEMBERS TO JOIN THE N.A.C.

CRYOTHERAPY IN CHIROPODY

WILLIAM B. IGNATOFF, D.S.C.*
Newark, N. J.

CRYOTHERAPY is defined as the therapeutic application of cold. We will limit this definition, for our purposes, to the use of localized freezing for the destruction of superficial growths.

Since the use of dry ice was first described in 1907 by Pusey,[1] many adherents to this form of therapy feel it is an exceedingly valuable therapeutic adjunct.

Stimulated by existing contradictory reports concerning the results of carbon dioxide snow therapy, we proceeded to evaluate its effect on angiomata, granuloma pyogenicum, keloids, depigmented areas and verrucae.

Subjects were selected in a consecutive order from clinic and private patients. No other treatment aside from the application of solid carbon dioxide or "dry ice" was used. Adequate follow-up was routine and there were no complications in any case.

Our study signifies that dry ice is a most useful addition to the ever-growing armamentarium in chiropody. Carbon dioxide snow has filled a gap. We cannot offer the 100 percent cure rate, but our percentages are comparable to other existing methods, and the treatment is simple, efficient and inexpensive.

We first delved into the factors that have retarded cryotherapy from attaining the degree of usage for which it is destined, and discovered:

(a) Until the introduction of the small, compact and portable unit which yields dry ice in convenient sized applicators in any office in a few seconds, dry ice production was dependent upon cumbersome equipment, or a dependable source of supply (the drug store), which yielded irregular chunks of dry ice which had to be carved to proper size with the resultant chipping and danger in handling.

(b) Incorrect operation and care of the dry ice unit yielded poor performance and was discouraging.

(c) Under-treatment or ignorance of application did not produce the desired results.

Operation and Care of the Unit

A complete understanding of the operation and care of the unit is essential. There are four simple steps for a perfect pencil of dry ice:

1. Select the applicator size equal to or slightly smaller than the lesion. In the care of very irregular lesions, a blotting-paper mask may be used with an applicator of a larger size. Dry ice will not penerate the insulating blotter-paper during the time of treatment.

2. The flange end of the applicator is dropped into the machine and the base is fastened.

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*From the Department of Dermatology, Newark Board of Health Clinics, Newark, N. J.; Edmond Edelson, M.D., Chief of Service.

Apparatus utilized in this study is the Kidde Dry Ice unit, supplied through the cooperation of Mr. Carl Sollmann, Director, Medical Sales Division, of the Kidde Manufacturing Company, Bloomfield, N. J.

3. Holding the machine *vertically*, the carbon dioxide is released from the cartridge.

4. The applicator is removed and the snow is firmly tamped.

Upon noting a decrease in snow formation, the apparatus must be given routine cleaning care.

When applying dry ice to the lesion, the applicator is held as you would a syringe, applying pressure on the black plunger. The transparent applicator pencils provide a convenient means of holding the hard translucent dry ice pencil during the treatment with a clear unobstructed view. There can be no spreading or chipping. The applicators are made of insulating plastic so the operator cannot injure his fingers during a treatment.

Action of Solid Carbon Dioxide

The action of solid carbon dioxide on the skin is one that permits thorough freezing of a penetrative nature. The prepared carbon dioxide pencil has a temperture of minus 70° C. and its effect on the tissue is one of quick freezing. Cell injury is the first result of this treatment, with abnormal cells being destroyed more rapidly than healthy tissue cells. As the freezing progresses, there is a thrombosis of blood vessel walls with an inflammatory exudation of lymph and phagocytosis, resulting in superficial necrosis of the exposed area[2].

Peculiarly, the factor of pain has not been a problem. The proper psychological approach, and conveying your firm belief it is cold they feel, quickly dispels any outburst by the patient. An explanation of the nature of the treatment, during the treatment, telling the patient they will feel a sensation of cold, and then it may feel hot, and may then become numb or throb, the treatment is completed before the patient realizes. We show children the apparatus and the cartridge. We explain we are making dry ice from the carbon dioxide gas. We never mention pain. We use only the terms cold, hot, numb or throb.

We do warn an adult that if after several hours he does have pain, warm saline soaks will give relief. If it is a child we have treated, we tell the parent, not the child, that if there is a complaint of pain, to soak the child's foot. If pain should persist, and the patient returns, drain the vesicle or bulla which has formed and he will have immediate relief.

Treatment Factors

The technique of treatment is subject to variations. The number of treatments is dependent upon several factors: the type of skin—dark-complexioned people generally can take a more severe treatment than light-complexioned people; the degree of pressure is determined by the depth of tissue underlying the lesion; and time depends upon the depth of freezing desired and this is in accord with the type and size of lesion under treatment.

Pressure is classed under the terms: light, medium and firm or heavy. The amount of pressure necessary is quickly learned by experience.

In most cases it suffices to merely cover the treated area with a band-aid. If the lesion is under the first or fifth metatarsal heads we apply a thicker pad to shield the area.

An antiseptic or anesthetic ointment is applied only in the presence of an ulcer.

Dry ice should not be used following x-ray therapy, or where one sees atrophy of skin, a radiodermatitis, or in the presence of a melanotic nevus within the affected area or in the immediate vicinity.

ANGIOMATA, benign tumors formed of blood vessels, respond well to dry ice therapy.

The Strawberry Mark (Raspberry Mark, Nevus Vasculosus, Nevus Sanguineus, Angioma), includes only the superficial blood vessels and have very little supportive structure. They may be present at birth or appear later as pin-head size or larger, and are from scarlet to purple in color.

Angioma Cavernosum (Cavernous Angioma), is a vascular nevus, usually present at birth. It is a bright red or purple rounded or flat mass, of varied shapes, and may involve the deep structures.

Nevus Araneus (Spider-like Nevus, Telangiectasia, Stellar Nevus) is, as the name implies, a small spider-like lesion of superficial blood vessels. It is not uncommon to find at the center of the spider nevus a "hub" from which the smaller vessels radiate. Destruction of this central point may eliminate the entire lesion.

Treatment Method: the lesion is first sponged with ether or alcohol. Using moderate pressure from 15-30 seconds, dry ice is applied to an area not exceeding the size of a dime.

This is repeated at intervals of from 2-4 weeks.

Results: in the treatment of 13 individuals, 9 yielded a satisfactory result, 2 changed to other therapy and 2 were lost from observation.

The number of applications, from 2-12, varied according to the size of the lesion treated.

GRANULOMA PYOGENICUM (Septic Granuloma) are erythyematous vascular soft papillomata which usually bleed easily and are often covered with a pyogenic membrane. There is usually little or no peripheral erythema. They are often preceded by trauma or infection.

Granuloma Pyogenicum occurs either as pedunculated or sessile (flat) elevated lesions.

Treatment Method: removing all sebaceous material and detritus with ether or alcohol, an applicator of dry ice of a size equal to the size of the lesion is applied with firm pressure for 15-30 seconds. The treatment is repeated at 2-4 week intervals if necessary.

Results: we treated 3 of this group with satisfactory results in 2 cases. One improved only slowly and therapy was completed with coagulation.

KELOID (Keloma, Keloid of Alibert) is a firm irregularly shaped tumor-like outgrowth at the site of a scar or trauma. It is elevated and, at first, appears whitish or pink in color, with the consistency of rubber, and frequently sends out claw-like prolongations. Keloids vary in size and in time become brown, hard and unchanging. They usually affect the colored race.

Treatment Method: cleansing the area of any sebaceous material with ether or alcohol, firm pressure is applied for 60-120 seconds. Treatment is repeated at 3-4 week intervals.

Results: in 4 cases, 2 responded by giving excellent results, one was improved and one showed no improvement.

DEPIGMENTED AREAS (the loss of natural pigment from the skin).

Treatment Method: in one case of leucoderma, dry ice was applied with firm pressure for 20-30 seconds, with the intent of producing vesiculation.

Results: it was noticed that in the areas of vesiculation, repigmentation was much more rapid than in the surrounding patches of untreated areas.

VERRUCAE are described as small circumscribed auto-inoculable epidermal papillary growths of variable size, shape and consistency.

Several clinical forms are recognized. All possess the same essential histological characteristics.

It is popularly accepted that warts are infectious and probably of a virus nature.

Treatment Method: all callous over the growth should be removed, thus permitting the dry ice to act directly on the lesion.

The lesion should then be cleansed with a little ether or alcohol to remove any sebaceous material and to assure a more uniform penetration of cold.

Selecting an applicator sleeve just equal to or slightly smaller than the lesion, the snow is applied directly to the growth. We have found that generally, 60 seconds with firm pressure is effective. The time has varied from 45-120 seconds.

Immediately following the treatment the exposed tissue will be frozen hard and appear white. Within 10-15 seconds the color returns.

The patient returns in 14 days. A drying and darkening of the lesion may be present, and occasionally the dry remains of a bulla may be seen around the growth.

Debridement of the area sometimes discloses the complete disappearance of the growth. If verrucous tissue is present, the carbon dioxide treatment is repeated.

Two to four weeks later the patient is seen again. If any papillary tissue is visible, the treatment is again applied.

Results: we are not alone in claiming satisfaction with the use of dry ice.

Wright[3] claims "Carbon dioxide snow seems to be the answer to the successful treatment of plantar warts." He reported 110 cases with this method and 106 cures, 2 failures and 2 defaults. Of the 106 cures, 84 required only a single treatment, 27 two treatments and 5, three treatments.

Liss[4] reported most satisfactory results and found "there is evidently very little pain, discomfort or inconvenience after treatment with carbon dioxide snow. Dressings are not essential."

Chiefitz[5] wrote "patients who have been treated with both potential cautery and cryotherapy have indicated a preference for the latter method because there was less discomfort and fewer destructive treatments required."

Ingersoll[6] reported one failure in 56 cases treated with dry ice.

Bates[7] found "results that were very gratifying."

We have seen 91 cases ranging in age from 4 years to 52 years, with 9 cured in one treatment, 30 in two, 24 in three, 9 in four, 2 in five, and 2 in seven. We had seven definite failures and eight patients did not return for follow-up treatment or observation. Disallowing the patients who defaulted, our cure rate is 91 percent.

Conclusions

Cryotherapy enables you to retain the patient who is afraid of surgery, injections or prolonged treatments.

The patient loses no time from work or school.

With the exception, where a bulla develops that requires opening, the patient can bathe, go swimming, and continue his normal routine in complete comfort.

The speed of application, the elimination of bandages, the convenience to the patient and the high percentage of favorable results make cryotherapy an efficient dermatologic therapeutic modality.

Summary

A detailed report of the use of cryotherapy in a multitude of conditions seen in chiropody is presented in the belief that it is a highly useful modality which chiropodists have frequently overlooked while using not only a less effective but more painful and discomforting procedure.

The technique of application has been explained and the chiropodist is urged to become proficient in it so that it will become a useful part of a varied armamentarium.

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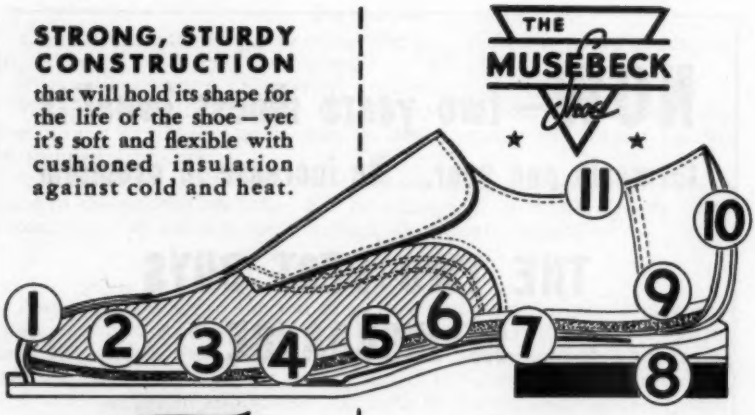

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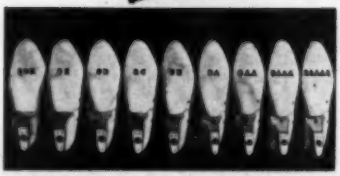

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1953 N.A.C. AWARDS FOR RESEARCH IN CHIROPODY

Sponsored by the
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Rules

1. Awards will be offered for papers on research in the field of chiropody. Papers must be submitted by April 15, 1953.
2. The monetary considerations provided are as follows:
   First Award—Four Hundred Dollars
   Second Award—Two Hundred Fifty Dollars
   Third Award—One Hundred Dollars
   Fourth Award—Fifty Dollars
   Fifth Award—Fifty Dollars
3. The manuscripts will be judged by a Committee comprising three officers of the N.A.C. The Committee is authorized to withhold the granting of awards in the event any or all papers submitted are considered to be of insufficient merit.
4. The recipients of the Awards will be announced by the President of the National Association of Chiropodists at the Annual Meeting of the Association in 1953.
5. All papers received become the property of the National Association of Chiropodists and shall be available for reproduction in any publication sponsored by the Association. Papers must be original and all rights with regard to publication are assigned to the National Association of Chiropodists.
6. Papers entered must be in the hands of the Executive Secretary by April 15, 1953.
7. Manuscripts should be typewritten and double spaced. No limits or restrictions are imposed on the number of words, use of photographs, charts, etc.
8. All inquiries concerning the Awards should be addressed to the Executive Secretary. Members desiring to submit papers must make application on a form provided for that purpose which may be obtained from the Executive Secretary.
9. Photographs, diagrams, drawings, statistical charts, etc., will be of value in presenting the subject of your choice.
10. Members who intend to submit papers in competition for the Awards are urged to begin organizing and classifying data, etc., relating to the subject selected. It is hoped that a large percentage of N.A.C. members will accept the opportunities offered by the creation of the Awards. When your paper has been completed, send it to the Executive Secretary.

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BOOKS

The Photograph of Patients, Including Discussions of Basic Photographic and Optical Principles, by H. Lou Gibson, F.B.P.A., A.P.S.A., Medical Division, Eastman Kodak Company, Rochester, N. Y. American Lecture Series Publication No. 95, A Monograph in American Lectures in Medical Photography. 118 pages; 93 illustrations (4 in color). Charles C. Thomas, Publisher, Springfield, Ill., 1952.

This small, well-written volume serves a dual purpose. It offers a systematic approach to the photography of patients and the photographer with a much needed reference. The author has graphically put first things first. The information contained herein is practical and devoid of superfluity. By the skillful use of photographs he has been able to explain a technical subject with a minimum of words. This alliance of words and photography is best illustrated in the chapters on lens properties, positioning, and lighting. These chapters offer a sound foundation for the pursuance of other branches of medical photography. The book is well printed and the reproductions are of the best quality.

The Internship, by Roscoe L. Pullen, A.B., M.D., F.A.C.P., Professor of Graduate Medicine; Director of the Division of Graduate Medicine; Vice-Dean, Tulane University of Louisiana School of Medicine; Senior Visiting Physician, Charity Hospital of Louisiana at New Orleans; Consultant in Medicine, Veterans Administration Hospital, New Orleans; Consultant to the Surgeon General, Department of the Army, Washington, D. C. American Lecture Series Publication No. 154, A Monograph in American Lectures in Internal Medicine. 35 pages. Charles C. Thomas, Publisher, Springfield, Ill., 1952. Price $1.25.

This booklet will provide a modern concept of the status of internships within the United States as relates to university teaching hospitals, other civilian institutions, and the government services hospitals. The author considers the important factors which influence the educational experience obtained by an acceptable approved internship. He discusses the effects of modern hospitalization, including the voluntary prepayment insurance program and the current popular trend of specialization. He recommends a junior internship during the fourth year in medical school in order to relieve the shortage of interns in this country. This would also enrich the educational value of the fourth year of medical school but it would place the senior internship on a residency basis and lessen the number of current internship spaces. The author believes that the rotating type of internship offers the best educational experience.

Man and His Years — By Federal Security Agency. First edition. 311 pages. Index. Price $3.25. Raleigh, N. C., Health Publications Institute, Inc., 1951.

At first glance, this study has the appearance of a come-lately move of the Federal Security Agency to advise on problems of the aging, which already have been given serious attention at many local and state levels. The time lag is emphasized in a summary of nationwide activities already in operation, presented in the final chapter by Clark Tibbitts, the conference director.

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The study had the benefit of good cooperation from authorities in certain fields under discussion. Eleven report chapters are presented, each the product of a special committee assigned to a specific field. These fields include population changes, education, health maintenance and rehabilitation, employment, family life, recreation, religion and community organization.

Chiropodists will be interested in the chapter on maintaining health in which the point is made that this is basically an individual matter, and that no physician, social service, or health program can be substituted for individual initiative and effort in the matter of preserving health.

The importance of early detection of health deterioration is emphasized, with consideration of individual health inventory and mass screening. The report suggests that increase in public assistance payments might permit more extensive health care. The section concludes that increased financial support is needed from all possible sources. An extensive summary is presented at the end of the chapter.

It can be said that this volume is helpful to the extent that it brings together under one cover the various approaches that should be made in attempting to solve those problems of aging that can be attacked with reasonable chance of success. The average worker in the healing arts will find it provides informative background.

WINNERS—1952 N.A.C. AWARDS FOR RESEARCH IN CHIROPODY

ANNOUNCEMENT was made at the Fortieth Annual Convention in Memphis that the following members were selected as winners of the 1952 N.A.C. Awards for Research in Chiropody.

Dr. J. V. Cerney
1207-8 U.B. Bldg.
Dayton, Ohio
First Award $500.00
"Nascent Oxygen for the Superficial Mycoses"

Dr. Charles E. Krausz
926 W. Lehigh Ave.
Philadelphia, Pa.
Second Award $250.00
"Chiropody Index 1921 to 1945, Volume I—Subject Index
Volume II—Author Index

Dr. Dale W. Austin
1400 No. Vermont Ave.
Hollywood, Calif.
Third Award $100.00
"Foot Balancing in Poliomyelitis"

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First Annual Chiropody Science Conclave
Region One, N.A.C.
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Saturday, October 11th

MORNING: **Address of Welcome.**
Merritt F. Garland, D.S.C., Chairman.
Dr. Amiel Caplan Clinic *(Audience Participation).*
1. Improved technique for plaster jacket therapy.
2. Fabrication of rigid toe prosthetics employing acrylic material.
3. Use and application of compensatory insert.

Amiel Caplan, Pod. D., F.A.C.F.O., Brooklyn, N. Y.
N.A.C. Forum — **Drs. M. Speizman, Wm. J. Stickel.**
LUNCH — Visit the Exhibitors.
1:30 P.M. Practical Foot Orthopedics.
Frank J. Carleton, Sr., D.S.C., F.A.C.F.O., Westchester, Pa.

AFTERNOON: Application of prepared medicated pressure bandages in the treatment of venous congestion and associated vascular conditions. *(Audience Participation).*
Harold D. Singer, D.S.C., Jersey City, N. J.
J. V. Behar, D.S.C., Newark, N. J.
VISIT EXHIBITORS.

Dinner — Dance — Entertainment — Dress Optional

Sunday, October 12th

MORNING: The X-ray evaluation of forefoot imbalance due to alteration of the metatarsus parabola.
Ralph E. Sansone, D.S.C., F.A.S.C.R., Hartford, Conn.
A New Approach to Practice Building.
1. Chiropodist-physician relationships.
2. Your appointment to hospital staff.
3. Positive action with the school program.
4. Short cuts to success.

Marvin W. Shapiro, D.S.C., Toledo, Ohio.
LUNCH—Visit the Exhibitors.

AFTERNOON: Skin disorders, their diagnosis and treatment in chiropodical practice.
William B. Ignatoff, D.S.C., F.A.C.F.S., Newark, N. J.
Orthopedic Forum—sponsored by American College of Foot Orthopedists.
William D. Cogan, D.S.C., F.A.C.F.O., Moderator.
1. Orthopedic analysis of the case.
2. Development of the orthopedic case.
3. Steps in the successful conclusion of the case.
4. Questions will be answered by a panel.

VISIT EXHIBITORS

EVENING: X-ray Forum—sponsored by American Society of Chiropodical Roentgenology.
Irving Yale, D.S.C., F.A.S.C.R., Moderator.
Radiographic consideration of bone pathology.
Drs. Vincent A. Jablon, Joseph Healey, Bernard Sherman.
Questions will be answered by a panel.

Registration fee $10.00—N.A.C. members: make check payable to REGION ONE, N.A.C.: send to Dr. J. F. Kelly, Hotel Statler, Boston, Mass.

First Annual Chiropody Science Conclave
Region One, N.A.C.
Vermont, Rhode Island, Massachusetts
Sheraton Plaza, Boston, Mass.

Monday, October 13th

MORNING: A comprehensive appliance therapy technique involving the use of basic and advanced principles of correction in the treatment of orthopedic foot conditions.

Part One: cast taking—cast correction—steps for the prefabrication of the mold.

Harvey Atkinson, D.S.C., F.A.C.F.O., Belmont, Mass. Past President M.C.A., Past Chairman N.A.C. Organization Committee.

New concepts in the diagnosis and treatment of athletic injuries of the lower extremity.

Thomas B. Quigley, M.D., F.A.C.S., Boston, Mass. Surgeon to the Department of Hygiene and the Harvard Athletic Association, Associate Professor of Surgery, Harvard Medical School.

LUNCH—Visit the Exhibitors.

AFTERNOON: Comprehensive appliance therapy technique (continued).

Part Two: a new approach in the fabrication of balance inlay prosthetics.

Harvey Atkinson, D.S.C., F.A.C.F.O., Belmont, Mass.

Film: Shoemaking in the Modern Plant.

PROGRAM FOR WIVES AND ASSISTANTS

SATURDAY	**9:00 A.M.**	Registration of wives and assistants.
	12:30 P.M.	Opening luncheon and address of welcome.
	2:30 P.M.	Demonstration and lecture "Personality and Beauty Development." Elizabeth Arden representative.
	7:30 P.M.	Dinner — Dance — Entertainment.
SUNDAY A.M.		Religious Services — see bulletin board.
	10:00 A.M.	"Corrective Voice Techniques and Office Practices." **Herbert L. Ellison, N.E. Tel. & Tel. Co.** (all invited).
	11:00 A.M.	"Development of Office Personality, Effective Handling and Courteous Approach to Patients." **Mr. George J. Brennan, Jr.,** Air Age. School of Secretarial Science.
	12:15 P.M.	Luncheon.
	3:00 P.M.	Bus Trip to Plymouth.
	5:00 P.M.	Dinner at Toll House.
	7:00 P.M.	Address by Mrs. Ruth Wakefield. Owner of Toll House, author, dietician and lecturer.
MONDAY	**10:30 A.M.**	"Modern Problems and Their Solutions." **Merrill Moore, M.D., Col. (M.C.) U.S.A.R.**

A registration fee of $6.00 will be charged. It will include luncheon, dinner, and admittance to lectures and demonstrations. We will appreciate knowing how many wives, assistants, sisters, sweethearts, etc., will attend so that proper reservations may be made.

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DR. S. S. HENDLER—"Treatment of Fungus Nail Conditions"

DR. ISADORE LEVIN—"Physical Medicine in Foot Orthopedics"

DR. JEROME MILLER—"Foot Contour Therapy including Casting Technic"

DR. HERMAN TAX — "How to Conduct A Children's Foot Practice"

DR. RAYMOND K. LOCKE — (1) "Pathological Interpretation of X-Rays"

(2) "A New Approach to Treatment"

DR. JONAS MORRIS—"Chiropodical Economics"

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J. Missouri M. A., August 1951.

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THE PROFESSIONAL SCHOOL CURRICULUM*

D. V. ANDERSON, B.A., D.S.C.†
Chicago, Ill.

THE only reason for the existence of formal education is for purposes of study discipline. Theoretically a student could obtain an education without formally attending school, but the average individual does not possess the ability to discipline himself to continued study without the organization and motivation offered by the school routine. In order to offer the student the maximum benefits of formal education the school must plan its objectives and present a well-organized curriculum in order to attain these objectives.

The four years of professional schooling cannot produce a good professional man, but it can teach him how to become a good professional man by proper organization and presentation of the curriculum.

It has been stated by educators that a profession is the correlation of knowledge, research, techniques and judgment. I like to consider that a professional education should teach the student how to correlate knowledge, research and technique and to develop judgment. It is the objective of the professional school to give the student the background and tools to continue this correlation with the experience in actual professional practice.

Many misinterpret the objectives and purposes of professional education. It is often assumed that the new graduate should function on the same basis as the twenty-five year practitioner. This is not the aim of professional education. There is no substitute for experience and maturity. If there were, parents would teach their children to avoid pitfalls and ultimately we would have a utopian society. No one anticipates that a young graduate with a degree in business administration will emerge as a business executive. In parallel the young professional graduate is merely prepared to develop his potential with experience. A professional education should develop capacities and a sense of values. It should be an education in philosophy and art.

The professional school merely gives the student a push to give him sufficient inertia to get him started in the right direction. Without continued effort on the part of the individual, the momentum dies and the progress ends. It is much like teaching a child to swing. He is shown the technique of balance and how to hold on. After that he can reach heights by his own effort.

A major objective in professional education is to make the student cognizant of the scope of his field. Very often at the end of the first semester of his first year the student of chiropody feels that he has mastered a great portion of that which there is to be learned in order that he become successful in his professional life. By the completion of his fourth year he should have been taught that the scope of his field is so broad that he has merely been aimed in the right direction and in order to keep abreast he must redouble his efforts in developing his knowledge, skill and judgment for the duration of his professional life.

*Presented at the American Chiropody Conference on Organization and Education, Memphis, Tenn.
†Dean, Illinois College of Chiropody and Foot Surgery

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In planning a curriculum for professional education we must consider the value and organization of the pre-professional curriculum. It may be stated that other things remaining equal the greater the educational background the better fitted is the professional man to take his place in society. The specific requirements must be adapted to the development of the profession and the curriculum offered in the professional school. I feel that at the present point of development of the profession of chiropody we must be somewhat flexible on the specific requirements. We are at that point of development where we need numbers and organization and we must not inhibit development in these lines by too rigid requirements. It will be better to be less rigid on the pre-professional requirements at the expense of greater effort in our professional school courses. We can well commit professional suicide by attempting to compete with older and better established professions at this time.

In a one-year prerequisite, courses in Inorganic Chemistry, Biology or Zoology and English should be recommended. In more extensive backgrounds the pre-medical education can be followed in the order in which it is generally offered. As the prerequisite is increased to two years we may add Organic Chemistry, Physics and Comparative Anatomy, but with a flexibility sufficient not to preclude students with good professional potential.

The professional school curriculum must develop and change slowly with the varying needs of a developing profession. The schools of chiropody have attempted to follow as closely as possible the curriculum recommendations of the Council on Education. The Council on Education and the Association of Colleges are now planning provisions on clock hour requirements per subject to better fit the needs of the current situation. The curriculum recommendation of the Council on Education is as follows:

Subject	*Hours*
Anatomy	256
Chemistry	192
Bacteriology	128
Physiology	224
Pathology	128
Materia Medica and Therapeutics	176
Hygiene	96
Chiropody	224
Foot Orthopedics	224
Foot Gear	64
Physical Therapy	224
Surgery	96
Orthopedic Surgery	32
Neurology	32
Psychology	32
Dermatology	96
Roentgenology	64
Diagnosis and Chiropodical Medicine	112
Emergencies	16
Clinical Practice	1,200

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Cultural	104
Additional hours (to be proportionately divided among above subjects)	440
Total number of hours in four-year course	4,160

With the exception of the hours in Physical Therapy the curriculum recommended by the Council is followed very closely. The hours in Chemistry perhaps should be reduced as the prerequisites in Chemistry become more specific. Apparent variations in the curricula of the various schools are primarily due to the methods in which the subject matter is presented. As an example courses in Histology and Embryology may be listed as separate entities or as divisions of Anatomy. Courses in Narcotics and Toxicology may be listed separately or under the common heading of Pharmacology. Most of our schools offer more Surgery than is recommended by the Council. This is an adaptation to the trend in the field of practice. Since the issuance of narcotic licenses to chiropodists in several states, specific courses in narcotics have been introduced. In the past few years the schools have increased the hours in roentgenology and podopediatrics which again is an attempt to meet the needs of the profession. All in all it is felt that the curriculum as offered by the schools of chiropody is good as listed. If there are weaknesses they are because of inadequate facilities for presentation and a lack of standardization of minimum material per subject among the schools. It is impossible to grossly improve our facilities for presentation of curriculum until we find some means of supplying a source of income to our schools comparable to that of other institutions teaching the healing arts. This lack of income, however, is balanced to a great extent by the sacrifice of our faculties and staffs who give their services for the benefit of the profession.

We can improve our over-all picture by a standardization of minimum materials taught in major courses in all schools. This standardization must be on the basis of minimum material with great flexibility to preserve individual initiative in the different schools. I would suggest a syllabus for each course with minimum requirements.

The curricula of the schools of chiropody compare favorably with those of any of the healing arts. May we compare our curriculum with that of dentistry? The obvious variation is in the method of presentation rather than in the organization of curriculum or the material offered. Most schools of dentistry have greater facilities for laboratory presentation. Perhaps with increased effort our presentation could include more laboratory study. I would like to show a curriculum comparison between the Illinois College of Chiropody and the dental school of a midwestern university. The curricula of the several accredited schools of Chiropody are essentially the same: I use the Illinois College of Chiropody curriculum as a basis for comparison as I am more familiar with its organization.

The Illinois College of Chiropody offers 252 class hours of Anatomy and 36 hours of Anatomy laboratory. The dental school offers only 77 class hours in Anatomy but 363 hours of laboratory. If we consider one class hour equivalent to two laboratory hours we have a total of

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270 hours of Anatomy offered in the school of chiropody and 258½ in the dental school. On this same basis we can compare the courses as follows:

Hours in School of Chiropody		*Hours in Dental School*	
Bio-Chemistry	72		55
Histology and Embryology	108		121
Pathology	108		198
Bacteriology	72		55
Physiology	144		93½
Pharmacology	180		55
Chiropody	198	Operative Dentistry	239
Prosthesis	36		351
Technical Composition	18		11
Medicine	90		22
Orthopedics	234	Orthodontia	55
Surgery	180		99
Radiology	72		22
Podopediatrics	36	Pedodontia	22
Diagnosis	72		11
Jurisprudence	18		1
Practice Management	18		33

In addition the school of chiropody offers 108 hours of Dermatology, 36 hours of Medical Psychology, 128 hours of Physical Medicine and 72 hours of Neurology. The school of dentistry offers in addition 11 hours of Nutrition, 22 hours of Anesthesia, 11 hours of History of Dentistry, 33 hours of Seminars, 11 hours of Clinical Orientation and 3 quarter hours of electives. The school of chiropody offers 1620 hours of clinical practice and the school of dentistry 1400 hours.

The subject material of the course in Nutrition taught as an entity in the dental school is covered in the Physiology and Bio-Chemistry courses in the school of chiropody. Anesthesia taught as a unit in the dental school is taught in the Surgery and Chiropody courses in the school of chiropody. The clinical orientation course of the dental school is paralleled by the clinical observation period and a course in clinical preparation in the school of chiropody.

The 33 hours of Seminar may be compared to the thesis preparation and research in the school of chiropody. The school of chiropody offers 108 class hours and 72 laboratory hours in General and Organic Chemistry which is not offered in the dental school as it is a specific prerequisite in the instance of the latter. The total hours including laboratory, clinical and class hours in the dental school total 4217 and in the school of chiropody 4300.

This comparison is not intended to indicate that the curriculum with the greater number of class hours in relationship to the laboratory hours is the most desirable. I feel that the schools of chiropody should attempt to increase facilities and develop faculties that will make possible more laboratory education.

Currently there is a trend in medical education curriculum to swing from a preponderance of theory to more of the practical application.

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Many professional educators feel that more general principles should be taught and less detail. The more progressive educators believe that instruction in methods and principles is more important than the development of a maximum knowledge of facts.

It might be well to consider the value of such trends in curricula of the schools of chiropody. Courses based on a combination lecture, demonstration and laboratory allow the student to develop on the basis of intelligence rather than to make him dependent on pure memory. The accumulation of a vast knowledge of facts may produce a good technician, but we of the profession would like to feel that we practice an art and that our value is primarily based on our judgment and ability to reason. When general principles are learned by practical application, by visualization and by testing, the learning is retained and is useful.

Let us not attempt to join too much specialization into our chiropody education. Specialization in the allied fields is obtained in post graduate work. Men in the field of practice suggest curriculum changes to include increased hours in Podopediatrics, Roentgenology and even Clinical Laboratory courses. There is justification for some consideration of minimum education in such fields but let us not crowd out the basic general principles. Let us rather develop graduate course curricula that will provide these needs.

In the early history of medical education we found the professional man educated almost entirely on the basis of observation and practical experience. Then came the development of a curriculum top-heavy in theory. Until recently the trend was to set rigid curriculum standards; now it is felt that there is a value to the rough edges that allow for freedom of movement and initiative. We may well profit by the experience of professions older than ours and refrain from swinging too violently from one extreme to the other.

The basic curriculum of the schools of chiropody is good. We need more facilities and instruction personnel for more laboratory work. We should develop more visual education in our curricula. A better developed graduate curriculum is needed. We must maintain a flexibility in our curriculum requirements to allow for initiative and the changing needs of the profession with just enough rigidity to provide stability. Our educational program has been in existence for less than forty years—we have come a long way!

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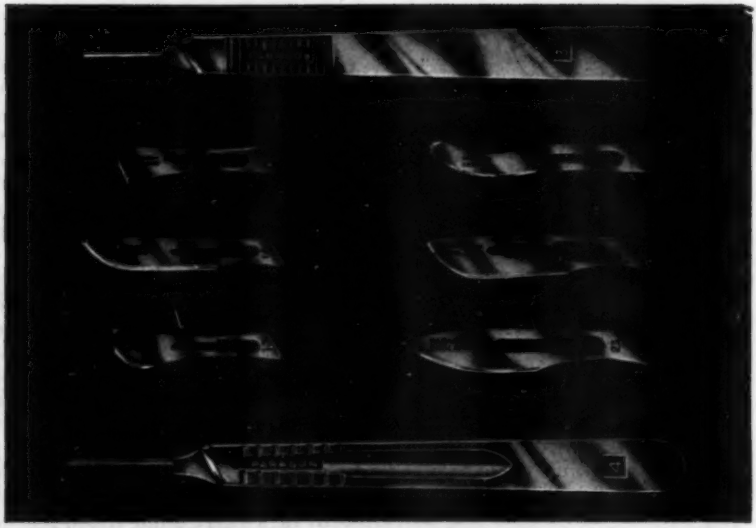
The N.A.C. fiscal year ended on May 31, 1952. Dues for 1952-53 were due June first. Members are requested to send their checks to their respective state society secretaries or treasurers immediately.



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ULTRASONIC energy may be successfully employed to detect and localize calculi or other foreign bodies which are lodged in soft tissues of the body and are not visible by roentgenography. The technic for applying the radar principle to medicine was developed by Dr. George D. Ludwig at the Naval Medical Research Institute, Bethesda, Md. High frequency sound waves generated by a quartz crystal are transmitted into the body tissue from an instrument in direct contact with the skin. Reflections or echoes of these waves occur from the bones and any foreign substance that possesses acoustical properties unlike those of the surrounding tissues. The reflected waves are transformed into electric impulses which are amplified and displayed on a cathode ray oscillograph screen. The distance of the echo from the initial pulse gives the depth of the foreign body in the tissues. Although not yet tried on human beings, the method has been highly successful with animals, and the ultrasonic energy has not been harmful to the tissues.

ORGANIZATION NEWS

WISCONSIN

DR. P. H. GROSS of Milwaukee has been elected Secretary-Treasurer of the Wisconsin Society of Chiropodists to fill the unexpired term of the late Dr. L. L. Zeeman. Dr. Earl Buske succeeded Dr. Zeeman as N.A.C. Delegate to the Memphis Convention.

CALIFORNIA AUXILIARY ELECTS OFFICERS

THE election of officers was held during the California State Convention at the El Rancho Hotel, Sacramento, on May 30, 1952, with the following officers elected:

President
Mrs. Louis Anderson
First Vice President
Mrs. R. Aronow
Second Vice President
Mrs. A. A. Silva
Secretary
Mrs. Robert L. Jacoby
Treasurer
Mrs. R. M. Sanday
Auditor
Mrs. J. A. Kinkella

In memory of the late Dr. L. L. Zeeman, the State Auxiliary has donated ten dollars to the California College of Chiropody Trust Fund.

F.P.R.S. CONVENTION OCTOBER 18-20, 1952 IN CHICAGO

THE Twenty-third Annual Convention of the Fellows Pedic Research Society will be held at the Morrison Hotel in Chicago, October 18-20, 1952. The annual meeting of the group will be held Saturday evening, October 18th at eight o'clock.

The following scientific program will be presented: Dr. Lester A. Walsh will lecture on foot surgery.

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The presentation will include slides dealing with common surgical problems of the feet. Dr. Victor S. Cavener will lecture on "Adenylic Acid Therapy—Its Metabolic Function, Indication and Therapeutic Usage." Dr. Irving Yale will lecture on clinical roentgenology.

Two panel discussions are being offered. One deals with the merits of various types of appliances, and the members of this panel are Dr. Ernest Wright, Dr. T. B. Ingersoll and Dr. Jack Stern.

The second panel concerns manipulation—mobilization which will be accompanied by demonstrations. Drs. George Custer, C. I. Groff and T. P. Nichols will lead the discussions.

MISCELLANEOUS

F.T.C. ACTS ON ATHLETE'S FOOT REMEDY

WILLIAM WAITE KELLER and Charles Phellis Keller, copartners trading as Sorbol Company, Mechanicsburg, Ohio, have entered into a stipulation with the Federal Trade Commission to discontinue representing that the product designated T-4-L Solution reaches or kills deeply imbedded athlete's foot infections or that it has any healing qualities.

They also stipulate that they would stop representing that the product reaches or kills more germs or is faster acting than remedies of similar composition, or that it penetrates the skin.

The stipulation was approved by the Commission in accordance with its policy of encouraging law observance through cooperation in certain types of cases where there has been no intent to defraud or mislead.

NEW JERSEY LEGISLATURE DEFINES "A PRESCRIPTION"

THE New Jersey Legislature amended the law relating to the practice of pharmacy, by, among other things, defining *prescription* as an order for drugs or medicines or combinations or mixtures thereof, written or signed by a duly licensed physician, dentist, veterinarian, or other medical practitioner licensed to write prescriptions intended for the treatment or prevention of disease in man or animals, and includes orders for drugs or medicines or combinations or mixtures thereof transmitted to pharmacists through word of mouth, telephone, telegraph, or other means of communication by a duly licensed physician, dentist, veterinarian, or other medical practitioner licensed to write prescriptions intended for the treatment or prevention of disease in man or animals, and such prescriptions received by word of mouth, telephone, telegraph, or other means of communication shall be recorded in writing by the pharmacist and the record so made by the pharmacist shall constitute the original prescription to be filed by pharmacist; provided that no prescription for any narcotic drug shall be given or transmitted to pharmacists in any manner other than in writing signed by the physician, dentist, veterinarian, or other practitioner giving or transmitting the same nor shall such prescription be renewed or refilled.

PHYSIQUES

STOCKY, muscular college students are likely to succeed in engineering; portly young men with substandard muscles are better off in the law. These are conclusions of Frederick L. Stagg, Harvard Re-

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*Cryotherapy in Chiropody, W. B. Ignatoff, D.S.C., to be published.

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search Fellow in Physical Anthropology, who specializes in human bodies and their effects on their tenants. Stagg studied the careers of 2,631 Harvard men of the classes of 1876-1912 whose body types had been recorded photographically during undergraduate physical training programs. He coded the information that he gathered and punched it on cards. Then he ran the cards through sorting machines to see how the career of each man compared with his physique. When the information cards were processed by the machine, they showed that lean and nonmuscular Harvard students tended to become government officials or parsons. Moderately lean students with better muscles than average often became successful scientists. Harvard-bred artists usually developed out of students with medium fleshiness and below-par muscles. The heavy but muscular students went in for practical callings of engineering or business and generally succeeded, while lighter-bodied competitors dropped out. A few of the Harvard men took to manual labor, but only the poorer-muscled ones stayed at that level. The better-muscled soon rose to positions where they didn't need muscles.

Management Review, Jan. 1952.

THE OLDEST PROFESSION

AFTER digging into the social customs of 250 or more tribes scattered around the world, Anthropologist George Peter Murdock, of Yale, has concluded that prostitution is not the world's oldest profession. Psychiatry is. Professor Murdock began by noting that prostitution (as distinct from mere laxity in sexual behavior) does not exist in any primitive society even today, but that the medicine man is universal. And the medicine man in aborigi-

nal cultures is always a magician who practices faith healing. Though he may belong to a tribe skilled in the use of drugs like quinine, he usually leaves the practice of physical medicine to old men or women who become specialists as herbalists or bonesetters. The true medicine man, says Murdock, confines his practice to curing the ills of the mind. And surprisingly often, he succeeds. Psychoanalysis, Murdock finds, has much in common with primitive magic. From this, Murdock considers it a short, logical step "to regard the medicine man as the lineal ancestor not of the physician but of the psychiatrist." Modern sophisticates who speak jokingly of their psychoanalysts as "witch doctors" are closer to the mark than they think.

Time, Feb. 11, 1952.

DEATHS REPORTED

Dr. Leon Var
Istanbul, Turkey

THE death of Dr. Leon Var of Istanbul, Turkey, on June 14, 1952, has been reported.

Dr. Var was an affiliate member of the N.A.C. and very active in his efforts to improve the standards of chiropody in Turkey.

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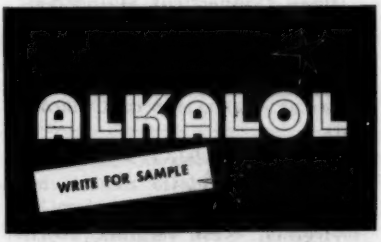

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CONVENTION DATES

(CE-Commercial Exhibitors invited)

1952

REGION ONE CONVENTION
Vermont, Massachusetts, Rhode Island, Connecticut, Maine, New Hampshire
Boston, Mass., Oct. 11-13, 1952
Sheraton Plaza (CE)

MISSOURI ASSOCIATION OF CHIROPODISTS
Joplin, Mo., Oct. 11-12, 1952
Connor Hotel

REGION EIGHT SYMPOSIUM
Virginia, West Virginia, North Carolina, District of Columbia
Washington, D. C., Oct. 18-19 1952
Wardman Park Hotel

PEDIC RESEARCH SOCIETY CONCLAVE
Chicago, Ill., Oct. 18-20, 1952
Hotel Morrison

1953

NATIONAL ASSOCIATION OF CHIROPODISTS
Los Angeles, Calif., August 13-18, 1953
Hotel Statler (CE)

REGION FIVE
March 20-22, 1953
Chicago, Ill.

REGION SIX
April 9-11, 1953
Denver, Colorado

REGION THREE
April 23-26, 1953
Atlantic City, N. J.

REGION FOUR
June 4-7, 1953
Cleveland, Ohio

REGION ELEVEN
June 18-20, 1953
Fort Worth, Texas

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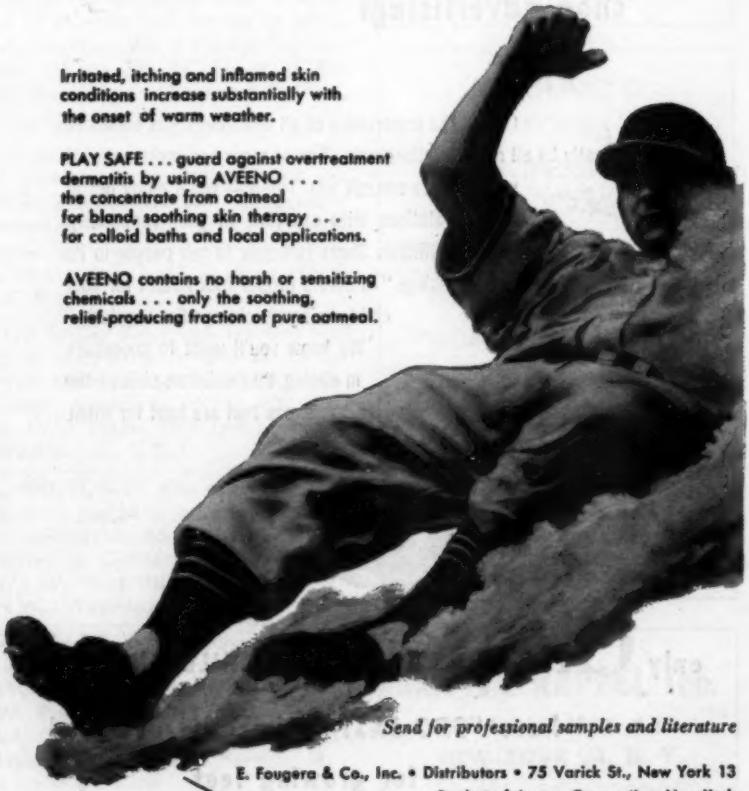

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